

# Protection devices for system immunity

Quick reference guide



July 2005

## Transient voltage suppressors: 200W Transils – STmite

Power* [W]	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number unidirect.	$V_{BR}$ min @ $I_R$		$V_{CL}$ max @ $I_{FP}$		$I_{FSM}$ [A]	Package
				[V]	[mA]	[V]	[A]		
200	5	50	SM2T6V8A	6.4	10	9.2	19.6	25	STmite
200	12	1	SM2T14A	13.3	1	19.9	9.0	25	STmite
200	16	1	SM2T18A	17.1	1	26	7	25	STmite
200	24	1	SM2T27A	25.7	1	38.9	4.6	25	STmite

## Transient voltage suppressors: 400W Transils – Axial

Power* [W]	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number		$V_{BR}$ min @ $I_R$		$V_{CL}$ max @ $I_{FP}$		$I_{FSM}$ [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
400	5.8	1000	BZW04-5V8	BZW04-5V8B	6.45	10	10.5	38	30	DO-15
400	10.2	5	BZW04-10	BZW04-10B	11.4	1	16.7	24	30	DO-15
400	12.8	5	BZW04-13	BZW04-13B	14.3	1	21.2	19	30	DO-15
400	15.3	1	BZW04-15	BZW04-15B	17.1	1	25.2	16	30	DO-15
400	25.6	1	BZW04-26	BZW04-26B	28.5	1	41.5	9.6	30	DO-15
400	28.2	1	BZW04-28	BZW04-28B	31.4	1	45.7	8.8	30	DO-15
400	30.8	1	BZW04-31	BZW04-31B	34.2	1	49.9	8	30	DO-15
400	33.3	1	BZW04-33	BZW04-33B	37.1	1	53.9	7.4	30	DO-15
400	47.8	1	BZW04-48	BZW04-48B	53.2	1	77	5.2	30	DO-15
400	239	1	BZW04-239	BZW04-239B	266	1	384	1.5	30	DO-15
400	299	1	BZW04-299	BZW04-299B	332	1	482	0.9	30	DO-15
400	342	1	BZW04-342	BZW04-342B	380	1	548	0.9	30	DO-15
400	376	1	BZW04-376	BZW04-376B	418	1	603	0.8	30	DO-15

## Transient voltage suppressors: 400W Transils – SMA

Power* [W]	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number		$V_{BR}$ min @ $I_R$		$V_{CL}$ max @ $I_{FP}$		$I_{FSM}$ [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
400	5	800	SMAJ5.0A-TR	SMAJ5.0CA-TR	6.4	10	9.2	43.5	40	SMA
400	6	800	SMAJ6.0A-TR	SMAJ6.0CA-TR	6.7	10	10.3	38.8	40	SMA
400	6.5	500	SMAJ6.5A-TR	SMAJ6.5CA-TR	7.2	10	11.2	35.7	40	SMA
400	10	5	SMAJ10A-TR	SMAJ10CA-TR	11.1	1	17	23.5	40	SMA
400	12	5	SMAJ12A-TR	SMAJ12CA-TR	13.3	1	19.9	20.1	40	SMA
400	13	1	SMAJ13A-TR	SMAJ13CA-TR	14.4	1	21.5	18.6	40	SMA
400	15	1	SMAJ15A-TR	SMAJ15CA-TR	16.7	1	24.4	16.4	40	SMA
400	18	1	SMAJ18A-TR	SMAJ18CA-TR	20	1	29.2	13.7	40	SMA
400	22	1	SMAJ22A-TR	SMAJ22CA-TR	24.4	1	35.5	11.2	40	SMA
400	24	1	SMAJ24A-TR	SMAJ24CA-TR	26.7	1	38.9	10.3	40	SMA
400	26	1	SMAJ26A-TR	SMAJ26CA-TR	28.9	1	42.1	9.5	40	SMA
400	28	1	SMAJ28A-TR	SMAJ28CA-TR	31.1	1	45.4	8.8	40	SMA
400	30	1	SMAJ30A-TR	SMAJ30CA-TR	33.3	1	48.4	8.3	40	SMA
400	33	1	SMAJ33A-TR	SMAJ33CA-TR	36.7	1	53.3	7.5	40	SMA
400	40	1	SMAJ40A-TR	SMAJ40CA-TR	44.4	1	64.5	6.2	40	SMA
400	43	1	SMAJ43A-TR	SMAJ43CA-TR	47.8	1	69.7	5.7	40	SMA
400	48	1	SMAJ48A-TR	SMAJ48CA-TR	53.3	1	77.4	5.2	40	SMA
400	58	1	SMAJ58A-TR	SMAJ58CA-TR	64.4	1	93.6	4.3	40	SMA
400	70	1	SMAJ70A-TR	SMAJ70CA-TR	77.8	1	113	3.5	40	SMA
400	85	1	SMAJ85A-TR	SMAJ85CA-TR	94.4	1	137	2.9	40	SMA
400	130	1	SMAJ130A-TR	SMAJ130CA-TR	144	1	209	1.9	40	SMA
400	170	1	SMAJ170A-TR	SMAJ170CA-TR	189	1	275	1.4	40	SMA
400	188	1	SMAJ188A-TR	SMAJ188CA-TR	209	1	328	1.4	40	SMA

### Transient voltage suppressors: 600W Transils – Axial

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number		V <sub>BR</sub> min @ I <sub>r</sub>		V <sub>CL</sub> max @ I <sub>pp</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
600	5.8	1000	BZW06-5V8	BZW06-5V8B	6.45	10	10.5	57	100	DO-15
600	6.4	500	BZW06-6V4	BZW06-6V4B	7.13	10	11.3	53	100	DO-15
600	10.2	5	BZW06-10	BZW06-10B	11.4	1	16.7	36	100	DO-15
600	12.8	5	BZW06-13	BZW06-13B	14.3	1	21.2	28	100	DO-15
600	13.6	5	BZW06-14	BZW06-14B	15.2	1	22.5	27	100	DO-15
600	15.3	1	BZW06-15	BZW06-15B	17.1	1	25.2	24	100	DO-15
600	18.8	1	BZW06-19	BZW06-19B	20.9	1	30.6	20	100	DO-15
600	23.1	1	BZW06-23	BZW06-23B	25.7	1	37.5	16	100	DO-15
600	25.6	1	BZW06-26	BZW06-26B	28.5	1	41.5	14.5	100	DO-15
600	28.2	1	BZW06-28	BZW06-28B	31.4	1	45.7	13.1	100	DO-15
600	30.8	1	BZW06-31	BZW06-31B	34.2	1	49.9	12	100	DO-15
600	33.3	1	BZW06-33	BZW06-33B	37.1	1	53.9	11.1	100	DO-15
600	47.8	1	BZW06-48	BZW06-48B	53.2	1	77	7.8	100	DO-15
600	273	1	BZW06-273	BZW06-273B	304	1	438	1.6	100	DO-15
600	342	1	BZW06-342	BZW06-342B	380	1	548	1.3	100	DO-15
600	376	1	BZW06-376	BZW06-376B	418	1	603	1.3	100	DO-15

### Transient voltage suppressors: 600W Transils – Axial

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number		V <sub>BR</sub> min @ I <sub>r</sub>		V <sub>CL</sub> max @ I <sub>pp</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
600	5.8	1000	P6KE6V8A	P6KE6V8CA	6.45	10	10.5	57	100	DO-15
600	6.4	500	P6KE7V5A	P6KE7V5CA	7.13	10	11.3	53	100	DO-15
600	12.8	1	P6KE15A	P6KE15CA	14.3	1	21.2	28	100	DO-15
600	15.3	1	P6KE18A	P6KE18CA	17.1	1	25.2	24	100	DO-15
600	23.1	1	P6KE27A	P6KE27CA	25.7	1	37.5	16	100	DO-15
600	25.6	1	P6KE30A	P6KE30CA	28.5	1	41.5	14.5	100	DO-15
600	28.2	1	P6KE33A	P6KE33CA	31.4	1	45.7	13.1	100	DO-15
600	30.8	1	P6KE36A	P6KE36CA	34.2	1	49.9	12	100	DO-15
600	33.3	1	P6KE39A	P6KE39CA	37.1	1	53.9	11.1	100	DO-15
600	47.8	1	P6KE56A	P6KE56CA	53.2	1	77	7.8	100	DO-15
600	58.1	1	P6KE68A	P6KE68CA	64.6	1	92	6.5	100	DO-15
600	70.1	1	P6KE82A	P6KE82CA	77.9	1	113	5.3	100	DO-15
600	171	1	P6KE200A	P6KE200CA	190	1	274	2.2	100	DO-15
600	213	1	P6KE250A	P6KE250CA	237	1	344	2	100	DO-15
600	256	1	P6KE300A	P6KE300CA	285	1	414	1.6	100	DO-15
600	342	1	P6KE400A	P6KE400CA	380	1	548	1.3	100	DO-15
600	376	1	P6KE440A	P6KE440CA	418	1	603	1.3	100	DO-15

### Transient voltage suppressors: high temperature 600W Transils – SMB

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [mA]	Part number unidirect.	V <sub>BR</sub> min @ I <sub>r</sub>		V <sub>CL</sub> max @ I <sub>pp</sub>		I <sub>FSM</sub> [A]	Package
				[V]	[mA]	[V]	[A]		
600	20.5	2	SM6HT24A	22.8	1	33.2	18	75	SMB
600	23.1	2	SM6HT27A	25.7	1	37.5	16	75	SMB
600	25.6	2	SM6HT30A	28.5	1	41.5	14.5	75	SMB
600	30.8	2	SM6HT36A	34.2	1	49.9	12	75	SMB
600	33.3	2	SM6HT39A	37.1	1	53.9	11.1	75	SMB
600	36.8	2	SM6HT43A	40.9	1	59.3	10.1	75	SMB

\*10/1000ms waveform

### Transient voltage suppressors: 600W Transils – SMB

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
600	5.8	1000	SM6T6V8A	SM6T6V8CA	6.45	10	10.5	57	100	SMB
600	6.4	500	SM6T7V5A	SM6T7V5CA	7.13	10	11.3	53	100	SMB
600	8.55	10	SM6T10A	SM6T10CA	9.5	1	14.5	41	100	SMB
600	10.2	5	SM6T12A	SM6T12CA	11.4	1	16.7	36	100	SMB
600	12.8	5	SM6T15A	SM6T15CA	14.3	1	21.2	28	100	SMB
600	15.3	5	SM6T18A	SM6T18CA	17.1	1	25.2	24	100	SMB
600	18.8	5	SM6T22A	SM6T22CA	20.9	1	30.6	20	100	SMB
600	20.5	5	SM6T24A	SM6T24CA	22.8	1	33.2	18	100	SMB
600	23.1	5	SM6T27A	SM6T27CA	25.7	1	37.5	16	100	SMB
600	25.6	5	SM6T30A	SM6T30CA	28.5	1	41.5	14.5	100	SMB
600	28.2	5	SM6T33A	SM6T33CA	31.4	1	45.7	13.1	100	SMB
600	30.8	5	SM6T36A	SM6T36CA	34.2	1	49.9	12	100	SMB
600	33.3	5	SM6T39A	SM6T39CA	37.1	1	53.9	11.1	100	SMB
600	58.1	5	SM6T68A	SM6T68CA	64.6	1	92	6.5	100	SMB
600	85.5	5	SM6T100A	SM6T100CA	95	1	137	4.4	100	SMB
600	128	5	SM6T150A	SM6T150CA	143	1	207	2.9	100	SMB
600	171	5	SM6T200A	SM6T200CA	190	1	274	2.2	100	SMB
600	188	5	SM6T220A	SM6T220CA	209	1	328	2	100	SMB

### Transient voltage suppressors: 600W Transils – SMB

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
600	5	800	SMBJ5.0A-TR	SMBJ5.0CA-TR	6.4	10	9.2	68	100	SMB
600	6	800	SMBJ6.0A-TR	SMBJ6.0CA-TR	6.7	10	10.3	61	100	SMB
600	6.5	500	SMBJ6.5A-TR	SMBJ6.5CA-TR	7.2	10	11.2	56	100	SMB
600	10	5	SMBJ10A-TR	SMBJ10CA-TR	11.1	1	17	37	100	SMB
600	12	5	SMBJ12A-TR	SMBJ12CA-TR	13.3	1	19.9	31	100	SMB
600	13	1	SMBJ13A-TR	SMBJ13CA-TR	14.4	1	21.5	29	100	SMB
600	15	1	SMBJ15A-TR	SMBJ15CA-TR	16.7	1	24.4	25.1	100	SMB
600	18	1	SMBJ18A-TR	SMBJ18CA-TR	20	1	29.2	21.5	100	SMB
600	22	1	SMBJ22A-TR	SMBJ22CA-TR	24.4	1	35.5	17.7	100	SMB
600	24	1	SMBJ24A-TR	SMBJ24CA-TR	26.7	1	38.9	16	100	SMB
600	26	1	SMBJ26A-TR	SMBJ26CA-TR	28.9	1	42.1	14.9	100	SMB
600	28	1	SMBJ28A-TR	SMBJ28CA-TR	31.1	1	45.4	13.8	100	SMB
600	30	1	SMBJ30A-TR	SMBJ30CA-TR	33.3	1	48.4	13	100	SMB
600	33	1	SMBJ33A-TR	SMBJ33CA-TR	36.7	1	53.3	11.8	100	SMB
600	40	1	SMBJ40A-TR	SMBJ40CA-TR	44.4	1	64.5	9.7	100	SMB
600	48	1	SMBJ48A-TR	SMBJ48CA-TR	53.3	1	77.4	8.1	100	SMB
600	58	1	SMBJ58A-TR	SMBJ58CA-TR	64.4	1	93.6	6.7	100	SMB
600	70	1	SMBJ70A-TR	SMBJ70CA-TR	77.8	1	113	5.5	100	SMB
600	85	1	SMBJ85A-TR	SMBJ85CA-TR	94.4	1	137	4.6	100	SMB
600	130	1	SMBJ130A-TR	SMBJ130CA-TR	144	1	209	3	100	SMB
600	170	1	SMBJ170A-TR	SMBJ170CA-TR	189	1	275	2.2	100	SMB
600	188	1	SMBJ188A-TR	SMBJ188CA-TR	209	1	328	2	100	SMB

### Transient voltage suppressors: digital purpose 600W Transils – SMB

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number unidirect.	V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
				[V]	[mA]	[V]	[A]		
600	3.3	200	SMLVT3V3	4.1	1	7.3	50	50	SMB
600	12	1	SMBJ12AVCL	13.2	1	15.8	17.5	50	SMB

\*10/1000μs waveform

### Transient voltage suppressors: 1500W Transils – Axial

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [mA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
1500	5	300	1N5908	–	6	1	7.6	30	200	DO-201
1500	5.8	1000	1.5KE6V8A	1.5KE6V8CA	6.45	10	10.5	143	200	DO-201
1500	6.4	500	1.5KE7V5A	1.5KE7V5CA	7.13	10	11.3	132	200	DO-201
1500	10.2	5	1.5KE12A	1.5KE12CA	11.4	1	16.7	90	200	DO-201
1500	12.8	1	1.5KE15A	1.5KE15CA	14.3	1	21.2	71	200	DO-201
1500	15.3	1	1.5KE18A	1.5KE18CA	17.1	1	25.2	59.5	200	DO-201
1500	18.8	1	1.5KE22A	1.5KE22CA	20.9	1	30.6	49	200	DO-201
1500	20.5	1	1.5KE24A	1.5KE24CA	22.8	1	33.2	45	200	DO-201
1500	25.6	1	1.5KE30A	1.5KE30CA	28.5	1	41.5	36	200	DO-201
1500	28.2	1	1.5KE33A	1.5KE33CA	31.4	1	45.7	33	200	DO-201
1500	30.8	1	1.5KE36A	1.5KE36CA	34.2	1	49.9	30	200	DO-201
1500	33.3	1	1.5KE39A	1.5KE39CA	37.1	1	53.9	28	200	DO-201
1500	40.2	1	1.5KE47A	1.5KE47CA	44.7	1	64.3	23.2	200	DO-201
1500	47.8	1	1.5KE56A	1.5KE56CA	53.2	1	77	19.5	200	DO-201
1500	53	1	1.5KE62A	1.5KE62CA	58.9	1	85	17.7	200	DO-201
1500	58.1	1	1.5KE68A	1.5KE68CA	64.6	1	92	16.3	200	DO-201
1500	70.1	1	1.5KE82A	1.5KE82CA	77.9	1	113	13.3	200	DO-201
1500	85.5	1	1.5KE100A	1.5KE100CA	95	1	137	11	200	DO-201
1500	154	1	1.5KE180A	1.5KE180CA	171	1	246	6.1	200	DO-201
1500	171	1	1.5KE200A	1.5KE200CA	190	1	274	5.5	200	DO-201
1500	188	1	1.5KE220A	1.5KE220CA	209	1	328	4.6	200	DO-201
1500	213	1	1.5KE250A	1.5KE250CA	237	1	344	5	200	DO-201
1500	256	1	1.5KE300A	1.5KE300CA	285	1	414	5	200	DO-201
1500	299	1	1.5KE350A	1.5KE350CA	332	1	482	4	200	DO-201
1500	342	1	1.5KE400A	1.5KE400CA	380	1	548	4	200	DO-201
1500	376	1	1.5KE440A	1.5KE440CA	418	1	603	3.5	200	DO-201

### Transient voltage suppressors: 1500W Transils – SMC

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [mA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
1500	5	300	SM5908	–	6	1	7.6	30	200	SMC
1500	5.8	1000	SM15T6V8A	SM15T6V8CA	6.45	10	10.5	143	200	SMC
1500	6.4	500	SM15T7V5A	SM15T7V5CA	7.13	10	11.3	132	200	SMC
1500	8.55	10	SM15T10A	SM15T10CA	9.5	1	14.5	103	200	SMC
1500	10.2	5	SM15T12A	SM15T12CA	11.4	1	16.7	90	200	SMC
1500	12.8	5	SM15T15A	SM15T15CA	14.3	1	21.2	71	200	SMC
1500	15.3	5	SM15T18A	SM15T18CA	17.1	1	25.2	59.5	200	SMC
1500	18.8	5	SM15T22A	SM15T22CA	20.9	1	30.6	49	200	SMC
1500	20.5	5	SM15T24A	SM15T24CA	22.8	1	33.2	45	200	SMC
1500	23.1	5	SM15T27A	SM15T27CA	25.7	1	37.5	40	200	SMC
1500	25.6	5	SM15T30A	SM15T30CA	28.5	1	41.5	36	200	SMC
1500	28.2	5	SM15T33A	SM15T33CA	31.4	1	45.7	33	200	SMC
1500	30.8	5	SM15T36A	SM15T36CA	34.2	1	49.9	30	200	SMC
1500	33.3	5	SM15T39A	SM15T39CA	37.1	1	53.9	28	200	SMC
1500	58.1	5	SM15T68A	SM15T68CA	64.6	1	92	16.3	200	SMC
1500	85.5	5	SM15T100A	SM15T100CA	95	1	137	11	200	SMC
1500	128	5	SM15T150A	SM15T150CA	143	1	207	7.2	200	SMC
1500	171	5	SM15T200A	SM15T200CA	190	1	274	5.5	200	SMC
1500	188	5	SM15T220A	SM15T220CA	209	1	328	4.6	200	SMC

\*10/1000ms waveform

### Transient voltage suppressors: 1500W Transils – SMC

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [mA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
1500	5	800	SMCJ5.0A-TR	SMCJ5.0CA-TR	6.4	10	9.2	171	200	SMC
1500	6	800	SMCJ6.0A-TR	SMCJ6.0CA-TR	6.7	10	10.3	152	200	SMC
1500	6.5	500	SMCJ6.5A-TR	SMCJ6.5CA-TR	7.2	10	11.2	140	200	SMC
1500	10	5	SMCJ10A-TR	SMCJ10CA-TR	11.1	1	17	92	200	SMC
1500	12	5	SMCJ12A-TR	SMCJ12CA-TR	13.3	1	19.9	79	200	SMC
1500	13	1	SMCJ13A-TR	SMCJ13CA-TR	14.4	1	21.5	73	200	SMC
1500	15	1	SMCJ15A-TR	SMCJ15CA-TR	16.7	1	24.4	64	200	SMC
1500	18	1	SMCJ18A-TR	SMCJ18CA-TR	20	1	29.2	53	200	SMC
1500	22	1	SMCJ22A-TR	SMCJ22CA-TR	24.4	1	35.5	44	200	SMC
1500	24	1	SMCJ24A-TR	SMCJ24CA-TR	26.7	1	38.9	40	200	SMC
1500	26	1	SMCJ26A-TR	SMCJ26CA-TR	28.9	1	42.1	37	200	SMC
1500	28	1	SMCJ28A-TR	SMCJ28CA-TR	31.1	1	45.4	34	200	SMC
1500	30	1	SMCJ30A-TR	SMCJ30CA-TR	33.3	1	48.4	32	200	SMC
1500	33	1	SMCJ33A-TR	SMCJ33CA-TR	36.7	1	53.3	29	200	SMC
1500	40	1	SMCJ40A-TR	SMCJ40CA-TR	44.4	1	64.5	24	200	SMC
1500	48	1	SMCJ48A-TR	SMCJ48CA-TR	53.3	1	77.4	20	200	SMC
1500	58	1	SMCJ58A-TR	SMCJ58CA-TR	64.4	1	93.6	16	200	SMC
1500	70	1	SMCJ70A-TR	SMCJ70CA-TR	77.8	1	113	13.9	200	SMC
1500	85	1	SMCJ85A-TR	SMCJ85CA-TR	94.4	1	137	11.5	200	SMC
1500	130	1	SMCJ130A-TR	SMCJ130CA-TR	144	1	209	7.5	200	SMC
1500	170	1	SMCJ170A-TR	SMCJ170CA-TR	189	1	275	5.7	200	SMC
1500	188	1	SMCJ188A-TR	SMCJ188CA-TR	209	1	328	4.6	200	SMC

### Transient voltage suppressors: 5000W Transils – Axial

Power* [W]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [mA]	Part number		V <sub>BR</sub> min @ I <sub>R</sub>		V <sub>CL</sub> max @ I <sub>PP</sub>		I <sub>FSM</sub> [A]	Package
			Unidirect.	Bidirect.	[V]	[mA]	[V]	[A]		
5000	10	5	BZW50-10	BZW50-10B	11.1	1	18.8	266	500	R6
5000	15	5	BZW50-15	BZW50-15B	16.6	1	26.9	186	500	R6
5000	22	5	BZW50-22	BZW50-22B	24.4	1	39.4	127	500	R6
5000	27	5	BZW50-27	BZW50-27B	30	1	48.3	103	500	R6
5000	33	5	BZW50-33	BZW50-33B	36.6	1	59	85	500	R6
5000	39	5	BZW50-39	BZW50-39B	43.3	1	69.4	72	500	R6
5000	56	5	BZW50-56	BZW50-56B	62.2	1	99.6	50	500	R6
5000	68	5	BZW50-68	BZW50-68B	75.6	1	121	41	500	R6
5000	82	5	BZW50-82	BZW50-82B	91	1	145	34	500	R6
5000	100	5	BZW50-100	BZW50-100B	111	1	179	28	500	R6
5000	150	5	BZW50-150	BZW50-150B	166	1	269	19	500	R6
5000	180	5	BZW50-180	BZW50-180B	200	1	322	16	500	R6

### Transient voltage suppressors for automotive Transils – Axial

Part number	V <sub>RM</sub> [V]	I <sub>RM</sub> max T <sub>c</sub> = 25°C [mA]	I <sub>RM</sub> max T <sub>c</sub> = 85°C [mA]	V <sub>BR</sub> min T <sub>c</sub> = 25°C [V]	V <sub>BR</sub> max T <sub>c</sub> = 25°C [V]	I <sub>R</sub> T <sub>c</sub> = 25°C [mA]	V <sub>CL</sub> max T <sub>c</sub> = 25°C [V]	I <sub>PP</sub> T <sub>c</sub> = 25°C [A]	C typ [nF]	Package
LDP24A	24	50	300	25	32	1	38	30	8	R6

\*10/1000ms waveform

## Surge suppressors for telecom intrabuilding and terminals: Trisils – SMA

I <sub>pp</sub> max* [A]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number	V <sub>R</sub> @ I <sub>R</sub>		V <sub>BO</sub> max @ I <sub>BO</sub>		I <sub>r</sub> min [mA]	C typ @ V <sub>r</sub> = 2V [pF]	Package
				[V]	[μA]	[V]	[mA]			
30	56	2	SMP30-62	62	5	82	800	150	40	SMA
30	61	2	SMP30-68	68	5	90	800	150	40	SMA
30	90	2	SMP30-100	100	5	133	800	150	35	SMA
30	108	2	SMP30-120	120	5	160	800	150	30	SMA
30	117	2	SMP30-130	130	5	173	800	150	30	SMA
30	162	2	SMP30-180	180	5	240	800	150	25	SMA
30	180	2	SMP30-200	200	5	267	800	150	25	SMA
30	198	2	SMP30-220	220	5	293	800	150	20	SMA
30	216	2	SMP30-240	240	5	320	800	150	20	SMA
30	243	2	SMP30-270	270	5	360	800	150	20	SMA

## Surge suppressors for telecom terminals: Trisils – SMA

I <sub>pp</sub> max* [A]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number	V <sub>R</sub> @ I <sub>R</sub>		V <sub>BO</sub> max @ I <sub>BO</sub>		I <sub>r</sub> min [mA]	C typ @ V <sub>r</sub> = 2V [pF]	Package
				[V]	[μA]	[V]	[mA]			
50	56	2	SMP50-62	62	5	82	800	150	40	SMA
50	61	2	SMP50-68	68	5	90	800	150	40	SMA
50	90	2	SMP50-100	100	5	133	800	150	35	SMA
50	108	2	SMP50-120	120	5	160	800	150	30	SMA
50	117	2	SMP50-130	130	5	173	800	150	30	SMA
50	162	2	SMP50-180	180	5	240	800	150	25	SMA
50	180	2	SMP50-200	200	5	267	800	150	25	SMA
50	198	2	SMP50-220	220	5	293	800	150	25	SMA
50	216	2	SMP50-240	240	5	320	800	150	25	SMA
50	243	2	SMP50-270	270	5	360	800	150	25	SMA

## Surge suppressors for telecom terminals: Trisils – SMB

I <sub>pp</sub> max* [A]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number	V <sub>R</sub> @ I <sub>R</sub>		V <sub>BO</sub> max @ I <sub>BO</sub>		I <sub>r</sub> min [mA]	C typ @ V <sub>r</sub> = 2V [pF]	Package
				[V]	[μA]	[V]	[mA]			
50	56	2	SMTPA62	62	5	82	800	150	40	SMB
50	61	2	SMTPA68	68	5	90	800	150	40	SMB
50	90	2	SMTPA100	100	5	133	800	150	35	SMB
50	108	2	SMTPA120	120	5	160	800	150	30	SMB
50	117	2	SMTPA130	130	5	173	800	150	30	SMB
50	162	2	SMTPA180	180	5	240	800	150	25	SMB
50	180	2	SMTPA200	200	5	267	800	150	25	SMB
50	198	2	SMTPA220	220	5	293	800	150	25	SMB
50	216	2	SMTPA240	240	5	320	800	150	25	SMB
50	243	2	SMTPA270	270	5	360	800	150	25	SMB

## Surge suppressors for telecom terminals: Trisils – Axial

I <sub>pp</sub> max* [A]	V <sub>RM</sub> [V]	I <sub>RM</sub> max @ V <sub>RM</sub> [μA]	Part number	V <sub>R</sub> @ I <sub>R</sub>		V <sub>BO</sub> max @ I <sub>BO</sub>		I <sub>r</sub> min [mA]	C typ @ V <sub>r</sub> = 2V [pF]	Package
				[V]	[μA]	[V]	[mA]			
50	56	2	TPA62	62	5	82	800	150	40	DO-15
50	90	2	TPA100	100	5	133	800	150	40	DO-15
50	108	2	TPA120	120	5	160	800	150	35	DO-15
50	117	2	TPA130	130	5	173	800	150	30	DO-15
50	162	2	TPA180	180	5	240	800	150	30	DO-15
50	180	2	TPA200	200	5	267	800	150	25	DO-15
50	198	2	TPA220	220	5	293	800	150	25	DO-15
50	216	2	TPA240	240	5	320	800	150	25	DO-15
50	243	2	TPA270	270	5	360	800	150	25	DO-15

\*10/1000μs waveform

## Surge suppressors for telecom equipment: Trisils – SMB

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max}$ @ $V_{RM}$ [μA]	Part number	$V_R$ @ $I_R$		$V_{BO} \text{ max}$ @ $I_{BO}$		$I_H \text{ min}$ [mA]	C typ @ $V_R = 2V$ [pF]	Package
				[V]	[μA]	[V]	[mA]			
75	6	2	SMP75-8	8	5	15	800	50 (typ)	75	SMB
80	126	2	SMP80MC-140	140	5	190	800	150	27	SMB
80	144	2	SMP80MC-160	160	5	220	800	150	26	SMB
80	180	2	SMP80MC-200	200	5	275	800	150	26	SMB
80	207	2	SMP80MC-230	230	5	320	800	150	26	SMB
80	243	2	SMP80MC-270	270	5	370	800	150	26	SMB
100	126	2	SMP100MC-140	140	5	180	800	150	60	SMB
100	144	2	SMP100MC-160	160	5	205	800	150	50	SMB
100	180	2	SMP100MC-200	200	5	255	800	150	45	SMB
100	207	2	SMP100MC-230	230	5	295	800	150	40	SMB
100	243	2	SMP100MC-270	270	5	345	800	150	40	SMB
100	6	2	SMP100LC-8	8	5	25	800	50 (typ)	75	SMB
100	22	2	SMP100LC-25	25	5	40	800	150	65	SMB
100	32	2	SMP100LC-35	35	5	55	800	150	55	SMB
100	55	2	SMP100LC-65	65	5	85	800	150	90	SMB
100	81	2	SMP100LC-90	90	5	125	800	150	80	SMB
100	108	2	SMP100LC-120	120	5	160	800	150	75	SMB
100	126	2	SMP100LC-140	140	5	190	800	150	65	SMB
100	144	2	SMP100LC-160	160	5	205	800	150	65	SMB
100	180	2	SMP100LC-200	200	5	255	800	150	60	SMB
100	207	2	SMP100LC-230	230	5	295	800	150	60	SMB
100	243	2	SMP100LC-270	270	5	345	800	150	60	SMB
100	290	2	SMP100LC-320	320	5	400	800	150	50	SMB
100	325	2	SMP100LC-360	360	5	460	800	150	50	SMB
100	360	2	SMP100LC-400	400	5	540	800	150	45	SMB

## Data Protection

### Data protection: ESD unidirectional diodes array

Number of lines	$V_{RM}$ [V]	$I_{RM} \text{ max}$ @ $V_{RM}$ [μA]	Part number	$V_{BR} \text{ min}$ @ $I_R$		$R_D \text{ typ}$ [mΩ]	C typ @ 0Vbias [pF]	Package
				[V]	[mA]			
2	12	5	ESDA14V2L	14.2	1	650	90	SOT-23
2	24	1	ESDA25W	25	1	1100	65	SOT323-3L
2	3	1	ESDA6V1DCB	6.1	1	500	155	QFN
2	3	0.5	ESDALC6V1P3	6.1	1	1000	12	SOT-663
2	3	0.1	ESDA14V2DCB	14.2	1	800	80	QFN
2	3	2	ESDA5V3L	5.3	1	280	220	SOT-23
2	5.25	20	ESDA6V1L	6.1	1	350	140	SOT-23
4	12	5	ESDA14V2SC5	14.2	1	650	100	SOT23-5L
4	14	0.075	ESDA17SC6	17	1	700	85	SOT23-6L
4	15	0.1	ESDA19SC6	19	1	800	80	SOT23-6L
4	24	1	ESDA25SC6	25	1	1000	60	SOT23-6L
4	24	1	ESDA25W5	25	1	1900	30	SOT323-3L
4	3	2	ESDA5V3SC5	5.3	1	230	280	SOT23-5L
4	3	2	ESDA5V3SC6	5.3	1	230	280	SOT23-6L
4	5	10	ESDA6V1-4F1	6.1	1	350	250 (max)	Flip-Chip
4	3	0.5	ESDA6V1P6	6.1	1	1500	70	SOT-666
4	5.25	20	ESDA6V1SC5	6.1	1	350	190	SOT23-5L
4	5.25	20	ESDA6V1SC6	6.1	1	350	190	SOT23-6L
4	3	1	ESDA6V1W5	6.1	1	350	90	SOT323-5L
4	3	0.5	ESDALC6V1P6	6.1	1	1500	12	SOT-666
4	3	1	ESDALC6V1W5	6.1	1	1100	12	SOT323-5L
4	3	0.5	ESDALC6V1P5	6.1	1	1500	12	SOT665-5L
4	3	0.5	ESDALC6V1F1	6.1	1	1000	12	Flip-Chip
5	3	0.5	ESDA6V1-5P6	6.1	1	1500	70	SOT-666

\*10/1000μs waveform



### Data protection: ESD unidirectional diodes array

Number of lines	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number	$V_{BR}$ min @ $I_R$		$R_o$ typ [m $\Omega$ ]	C typ @ 0Vbias [pF]	Package
				[V]	[mA]			
5	14	0.075	ESDA17-5SC6	17	1	1000	35	SOT23-6L
5	15	0.1	ESDA19-5SC6	19	1	1000	35	SOT23-6L
5	3	1	ESDA6V1-5W6	6.1	1	610	50	SOT323-6L
5	3	0.5	ESDA6V1-5P6	6.1	1	1500	70	SOT666-6L
6	5	2	ESDA6V1U1	6.1	1	500	100	SO-8
18	5	2	ESDA6V1S3	6.1	1	500	120	SO-20

### Data protection: ESD biidirectional diodes array

Number of lines	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number	$V_{BR}$ min @ $I_R$		$R_o$ typ [m $\Omega$ ]	C typ @ 0Vbias [pF]	Package
				[V]	[mA]			
4	12	1	ESDA14V2-4BF1	14.2	1	3200	15 (max)	Flip-Chip
4	12	1	ESDA14V2-BP6	14.2	1	1500	20	SOT-666
4	3	1	ESDA6V1-4BF1	6.1	1	1100	35	Flip-Chip
4	3	1	ESDA6V1-4BC6	6.1	1	450	45	SOT23-6L
4	5	1	ESDA6V1BC6	6.1	1	1350	20	SOT23-6L
6	24	2	ESDA25B1	25	1	1500	15	SO-8
2	12	1	ESDALC14V2-2PB5	14.2	1	tbd	tbd	SOT-665
2	24	1	ESDALC25-2PB5	25	1	tbd	tbd	SOT-665

### Data protection: USB port protection

Array Function	Part number	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	$V_{BR}$ min @ $I_R$		C typ [pF]	Package
				[V]	[mA]		
USB 1.1 Port protection	USB6B1	5.25	10	6	1	15	SO-8
USB 2.0 Port protection	USBLC6-4SC6	5	2	6	1	3	SOT23-6L
USB 2.0 Port protection	USBLC6-2SC6	5	1	6	1	2.5	SOT23-6L
USB 2.0 Port protection	USBLC6-2P6	5	1	6	1	2.5	SOT-666

### Rail-to-rail protection for xDSL, modem and ethernet

Array Function	Part number	$V_{RRM}$ [V]	$I_R$ max @ 15V [ $\mu$ A]	C max @ 5V [pF]	$V_f$ max @ 50mA [V]	IEC61000-4-2 Std level	HBM Mil Std 883E class	Package
Rail-to-Rail 4-line	DA108S1RL	18	2	35	1.2	4	3	SO-8
Rail-to-Rail 6-line	DA112S1RL	18	2	35	1.2	4	3	SO-8
R-to-R. 6-line Low Capa.	DALC112S1	18	2	7	1.3	3	3	SO-8
R-to-R. 6-line Low Capa.	DALC112S1RL	18	2	7	1.3	3	3	SO-8
R-to-R. 4-line Low Capa.	DALC208SC6	9	1	7	1.2	4	3	SOT23 - 6L

## Protection ICs

### Fixed voltage protection for telecom relay

$I_{pp}$ max* [A]	$V_{RM}$ [V]	$I_{RM}$ max @ $V_{RM}$ [ $\mu$ A]	Part number	$V_R$ min @ $I_R$		$V_{BO}$ max @ $I_{BO}$		$I_H$ min [mA]	Package
				[V]	[ $\mu$ A]	[V]	[mA]		
30	135	5	THBT15011D	150	50	210	400	150	SO-8
30	135	5	THBT16011D	160	50	230	400	150	SO-8
30	180	5	THBT20011D	200	50	290	400	150	SO-8
30	240	5	THBT27011D	270	50	380	400	150	SO-8
100	120	5	TLP140G	140	50	200	500	150	D <sup>2</sup> PAK
100	120	5	TLP140G-1	140	50	200	500	150	I <sup>2</sup> PAK
100	180	5	TLP200G	200	50	290	500	150	D <sup>2</sup> PAK
100	180	5	TLP200G-1	200	50	290	500	150	I <sup>2</sup> PAK
100	230	5	TLP270G	270	50	400	500	150	D <sup>2</sup> PAK
100	230	5	TLP270G-1	270	50	400	500	150	I <sup>2</sup> PAK

\*10/1000ms waveform

Continued on back cover

### Fixed voltage protection for telecom solid state relay

$I_{PP} \text{ max}^*$ [A]	Part number	$V_R \text{ min} @ I_R$		$V_{BO} \text{ max} (50\text{Hz})$	$I_H \text{ min}$ [mA]	Package
		[V]	[ $\mu\text{A}$ ]	[V]		
2 x 35	SSRP105B1	+ 105 / -180	10	+ 165 / - 225	150 (neg polarity) / 100 (pos polarity)	SO-8
2 x 15	SSRP130B1	+ 130 / - 185	10	+ 200 / - 280	150	SO-8

### Fixed voltage protection for SLIC

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max} @ V_{RM}$ [ $\mu\text{A}$ ]	Part number	$V_R \text{ min} @ I_R$		$V_{BO} \text{ max}$ [V]	$I_H \text{ min}$ [mA]	Package
				[V]	[mA]			
40	63	100	THDT6511D	65	1	85	150	SO-8

### Protection ICs programmable voltage SLIC protection

$I_{PP} \text{ max}^*$ [A]	Part number	$V_{RM}$ [V]	$I_{RM} \text{ max}$ $@ V_{RM}$ [ $\mu\text{A}$ ]	Max oper. voltage [V]	$V_{DEL} \text{ max} (10/700\text{ms})$ [V]	$I_H \text{ min}$ [mA]	Package
2 x 15	LCDP1521	150	5	150	5	150	SO-8
30	LCP02-150B1	-105 / 90	5	-110 to +95	8	150	SO-8 Wide
100	LCP02-150M	-105 / 90	5	-110 to +95	6 (+ suppressor) / 8 (- suppressor)	150	PowerSO-10
30	LCP1521S	150	5	150	7	150	SO-8
30	LCP152DEE	150	5	150	7	150	QFN 3x3
100	LCP3121	60	5	80	-	100	SO-8

### Protection ICs programmable current and voltage line card protection

$I_{PP} \text{ max}^*$ [A]	$V_{LG}$ [V]	$I_{LGL} \text{ max} @ V_{GL}$ [ $\mu\text{A}$ ]	Part number	$V_{ret} \text{ min} @ I_{LGL}$		$V_{SWON} \text{ max} @ I_{SWOFF} \text{ min}$		Package
				[V]	[mA]	[V]	[mA]	
100	175	10	CLP190D5	190	1	260	150	PPAK
30	200	10	CLP30-200B1	-	-	290	150	SO-8
100	200	10	CLP200M	215	1	290	150	PowerSO-10
100	240	10	CLP270M	270	1	380	150	PowerSO-10

### ISDN and U interface protection

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max} @ V_{RM}$ [ $\mu\text{A}$ ]	Part number	$V_{BR} \text{ min} @ I_R$		$V_{BO} \text{ max} @ I_{BO}$		$I_H \text{ min}$ [mA]	Package
				[V]	[mA]	[V]	[mA]		
30	70	10	TPI8011N	80	1	120	800	150	SO-8
30	105	10	TPI12011N	120	1	180	800	150	SO-8

### T1/E1 interface protection

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max} @ V_{RM}$ [ $\mu\text{A}$ ]	Part number	$V_{BO} \text{ max} @ I_{BO}$		$I_H \text{ min}$ [mA]	Package
				[V]	[mA]		
30	28	4	TPN3021	38	300	30	SO-8

### Bridge and protection all-in-one for telecom terminals

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max} @ V_{RM}$ [ $\mu\text{A}$ ]	Part number	$V_{BO} \text{ max} @ I_{BO}$		$I_H \text{ min}$ [mA]	Package
				[V]	[mA]		
30	200	5	TSI200B1	290	400	150	SO-8
30	220	5	TSI220B1	330	400	150	SO-8

### Overvoltage and overcurrent protection for telecom line

$I_{PP} \text{ max}^*$ [A]	$V_{RM}$ [V]	$I_{RM} \text{ max} @ V_{RM}$ [ $\mu\text{A}$ ]	Part number	$V_{BO} \text{ max} @ I_{BO}$		$I_H \text{ min}$ [mA]	Package
				[V]	[mA]		
30	60	6	TPP25011	340	200	180	SO-8

\*10/ 000 $\mu\text{s}$  waveform



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For selected STMicroelectronics sales offices fax:

France +33 1 55489569; Germany +49 89 4605454; Italy +39 02 8250449; Japan +81 3 57838216; Singapore +65 6481 5124; Sweden +46 8 58774411; Switzerland +41 22 9292900; United Kingdom and Eire +44 1628 890391; USA +1 781 861 2678

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