DATA SHEET

SILICON TRANSISTOR

PNP SILICON TRIPLE DIFFUSED TRANSISTOR

MP-3

DESCRIPTION

2SA1412-Z is designed for High Voltage Switching, especially in Hybrid Integrated Circuits.

FEATURES

- High Voltage : VCEO = -400 V
- High Speed : tr $\leq 0.7 \ \mu s$
- Complement to 2SC3631-Z

QUALITY GRADE

Standard

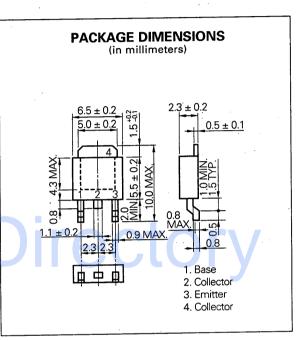
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Collector to Base Voltage	Vсво	-400	V
Collector to Emitter Voltage	Vceo	-400	V
Emitter to Base Voltage	Vево	7	۷
Collector Current (DC)	lc	-2.0	А
Collector Current (Pulse)*	lc	-4.0	А
Total Power Dissipation (T _a = 25 °C)**	Рт	2.0	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg −5	55 to +150	°C

* PW \leq 10 ms, Duty Cycle \leq 50 %

** When mounted on ceramic substrate of 7.5 $cm^2 \times 0.7$ mm



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CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	Ісво			-10	μΑ	$V_{CB} = -400 \text{ V}, \text{ I}_{E} = 0$
Emitter Cutoff Current	Ієво			-10	μΑ	$V_{EB} = -5.0 V, I_{C} = 0$
DC Current Gain	hfe1*	40	60	120	,	$V_{CE} = -5.0 V, I_{C} = -0.1 A$
DC Current Gain	hfe2*	10	22			$V_{CE} = -5.0 V, I_{C} = -1.0 A$
Collector Saturation Voltage	VCE(sat)*		-0.25	-0.5	v	$lc = -0.5 A$, $l_B = -0.1 A$
Base Saturation Voltage	VBE(sat)*		-0.85	-1.2	v	$lc = -0.5 A$, $l_B = -0.1 A$
Gain Bandwidth Product	fr		40		MHz	Vce = -10 V, le = -100 mA
Output Capacitance	Сов		30		pF	Vсв = −10 V, IE = 0, f = 1.0 MHz
Turn-on Time	ton		0.03	0.5	 μs	· · · · · · · · · · · · · · · · · · ·
Storage Time	tstg		1.4	2.0	μs	$I_c = -1.0 A$, $R_L = 150 Ω$ $I_{B1} = -1_{B2} = -0.2 A$,
Fall time	tr		0.1	0.7	μs	Vcc = -150 V

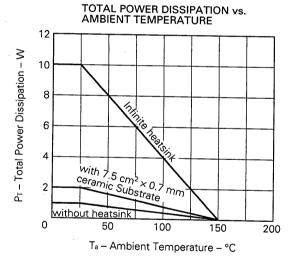
* Pulsed: PW \leq 350 μ s, Duty Cycle \leq 2 %

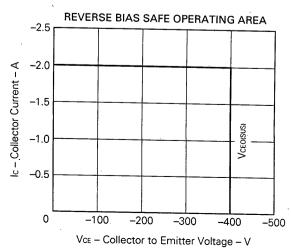
hFE Classification

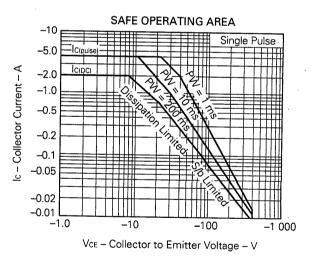
NEC

MARKING	L	ĸ
hf£1	40 to 80	60 to 120

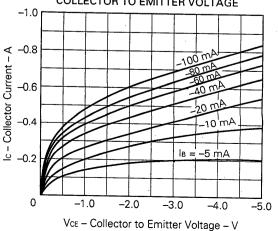




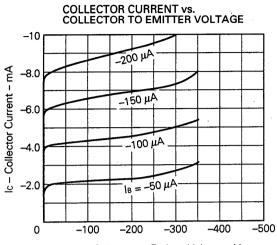




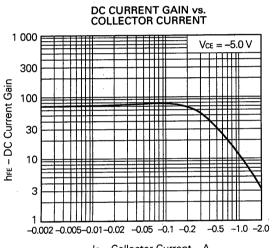
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



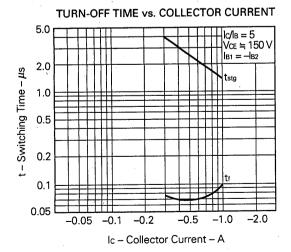
NEC



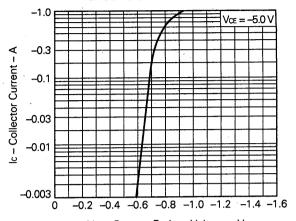
VcE – Collector to Emitter Voltage – V



Ic - Collector Current - A

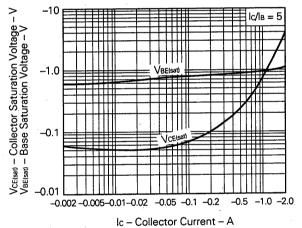


COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



VBE – Base to Emitter Voltage – V

COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



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2SA1412-Z

Reference

Application note name	No.
Quality control of NEC semiconductors devices.	TEI-1202
Quality control guide of semiconductors devices.	MEI-1202
Assembly manual of semiconductors devices.	IEI-1207
Design of Push-Pull Type Switching Regulators (Basic).	TEB-1002
Design of Push-Pull Type Switching Regulators (Applications).	TEB-1003
Optimum Base Drive Conditions of Switching Power Transistors.	TEB-1014

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Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.

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