

2N2221A, AL, JAN, JTX, JTXV, JANS
2N2221AUA JAN, JTX, JTXV, JANS
2N2221AUB JAN, JTX, JTXV, JANS
2N2222A, AL JAN, JTX, JTXV, JANS
2N2222AUA JAN, JTX, JTXV, JANS
2N2222AUB JAN, JTX, JTXV, JANS



Processed per MIL-PRF-19500/255

NPN SILICON SWITCHING TRANSISTORS

MAXIMUM RATINGS

Ratings	Symbol	All Types	Unit
Collector-Emitter Voltage	V _{CEO}	50	Vdc
Collector-Base Voltage	V _{CB0}	75	Vdc
Emitter-Base Voltage	V _{EBO}	6.0	Vdc
Collector Current	I _C	800	mAdc
Total Power Dissipation All UA @T _A = 25°C All other devices	P _T	0.65 ⁽²⁾ 0.5 ⁽¹⁾	W
Operating & Storage Junction Temperature Range	T _{op} , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Ambient All UA All other devices	R _{θJA}	210 325	°C/W °C/W

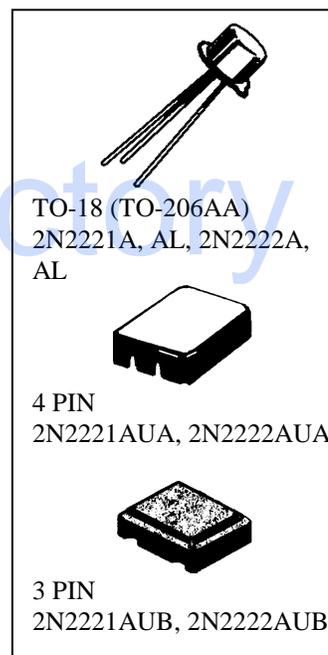
- 1) Derate linearly 3.08 m W/°C above T_A = +37°C
 2) Derate linearly 4.76 m W/°C above T_A = +63.5°C

ELECTRICAL CHARACTERISTICS (T_A = +25°C unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage I _C = 10 mAdc	V _{(BR)CEO}	50		Vdc
Collector-Base Cutoff Current V _{CB} = 75 Vdc V _{CB} = 60 Vdc	I _{CBO}		10 10	μAdc ηAdc
Emitter-Base Cutoff Current V _{EB} = 6.0 Vdc V _{EB} = 4.0 Vdc	I _{EBO}		10 10	μAdc ηAdc
Collector-Base Cutoff Current V _{CE} = 50 Vdc	I _{CES}		50	ηAdc



2N2221A, L, UA, UB, 2N2222A, L, UA, UB JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽⁴⁾					
Forward-Current Transfer Ratio					
$I_C = 0.1 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB	h_{FE}	30 50		
$I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB		35 75	150 325	
$I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB		40 100		
$I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB		40 100	120 300	
$I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB		20 30		
Collector-Emitter Saturation Voltage					
$I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$		$V_{CE(sat)}$		0.3 1.0	Vdc
Base-Emitter Voltage					
$I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$		$V_{BE(sat)}$	0.6	1.2 2.0	Vdc
DYNAMIC CHARACTERISTICS					
Forward Current Transfer Ratio					
$I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ kHz}$	2N2221A, L, UA, UB 2N2222A, L, UA, UB	h_{fe}		30 50	
Magnitude of Forward Current Transfer Ratio					
$I_C = 20 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}, f = 100 \text{ kHz}$		$ h_{fe} $	2.5		
Output Capacitance					
$V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		C_{obo}		8.0	pF
Input Capacitance					
$V_{EB} = 0.5 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		C_{ibo}		25	pF

(4)Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.