

## NPN SILICON HIGH POWER TRANSISTOR

Qualified per MIL-PRF-19500/208

### Devices

2N1487      2N1488      2N1489      2N1490

### Qualified Level

JAN  
JANTX  
JANTXV

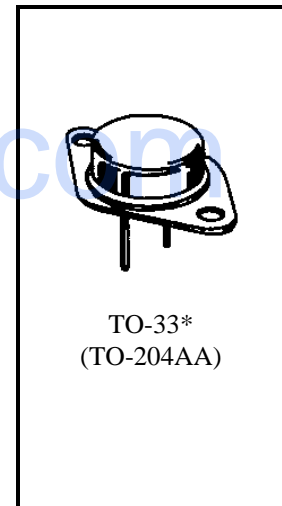
### MAXIMUM RATINGS

Ratings	Symbol	2N1487 2N1498	2N1488 2N1490	Unit
Collector-Emitter Voltage	$V_{CEO}$	40	55	Vdc
Collector-Base Voltage	$V_{CBO}$	60	100	Vdc
Collector-Emitter Voltage	$V_{CEX}$	60	100	Vdc
Emitter-Base Voltage	$V_{EBO}$	10		Vdc
Base Current	$I_B$	3.0		Adc
Collector Current	$I_C$	6.0		Adc
Total Power Dissipation @ $T_C = 25^{\circ}C$ <sup>(1)</sup>	$P_T$	75		W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^{\circ}C$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.33	$^{\circ}C/W$

1) Derate linearly @ 0.429 W/ $^{\circ}C$  for  $T_C > 25^{\circ}C$



\*See Appendix A for Package Outline

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}C$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100$ mAdc	2N1487, 2N1489 2N1488, 2N1490	$V_{(BR)CEO}$	40 55	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200$ $\mu$ Adc	2N1487, 2N1489 2N1488, 2N1490	$V_{(BR)CBO}$	60 100	Vdc
Collector-Emitter Breakdown Voltage $I_C = 0.5$ mAdc, $V_{EB} = 1.5$ Vdc	2N1487, 2N1489 2N1488, 2N1490	$V_{(BR)CEX}$	60 100	Vdc
Collector-Base Cutoff Current $V_{CB} = 30$ Vdc		$I_{CBO}$	25	$\mu$ Adc
Emitter-Base Cutoff Current $V_{EB} = 10$ Vdc		$I_{EBO}$	25	$\mu$ Adc

**2N1487, 2N1488, 2N1489, 2N1490 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

**ON CHARACTERISTICS <sup>(2)</sup>**

Forward-Current Transfer Ratio $I_C = 1.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$	2N1487, 2N1488 2N1489, 2N1490	$h_{FE}$	15 25	45 75	
Collector-Emitter Saturation Voltage $I_C = 1.5 \text{ Adc}, I_B = 300 \text{ mAdc}$ $I_C = 1.5 \text{ Adc}, I_B = 100 \text{ mAdc}$	2N1487, 2N1488 2N1489, 2N1490	$V_{CE(sat)}$		3.0 1.0	Vdc
Base-Emitter Voltage $I_C = 1.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$	2N1487, 2N1488 2N1489, 2N1490	$V_{BE(on)}$		3.0 2.0	Vdc

**DYNAMIC CHARACTERISTICS**

Small-Signal Short-Circuit Forward Current Transfer Ratio Cutoff Frequency $I_C = 100 \text{ mAdc}, V_{CB} = 12 \text{ Vdc}$		$ f_{hfb} $	500		kc
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		$C_{obo}$		700	pF

**SWITCHING CHARACTERISTICS**

Turn-On / Turn-Off Time $V_{CC} = 12 \text{ Vdc}; I_{B0} = I_{B2} = 150 \text{ mAdc}; I_{B1} = 300 \text{ mAdc}; R_C = 7.8 \Omega$		$t_{on} + t_{off}$		25	$\mu\text{s}$
---	--	--------------------	--	----	---------------

(2) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq$  2.0%.