NPN MEDIUM POWER SILICON SWITCHING TRANSISTOR
Qualified per MIL-PRF-19500/99

Devices		*Qualified Level*
2N696	**2N697**	**JAN**
2N696S	**2N697S**	

MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Total Power Dissipation @ $T_A = 25^0C$ [(1)] @ $T_C = 25^0C$ [(2)]	P_T	0.6 2.0	W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.075	$^0C/mW$

1) Derate linearly 4.0 mW/^0C for $T_A > 25^0C$
2) Derate linearly 13.3 mW/^0C for $T_C > 25^0C$

TO-5*
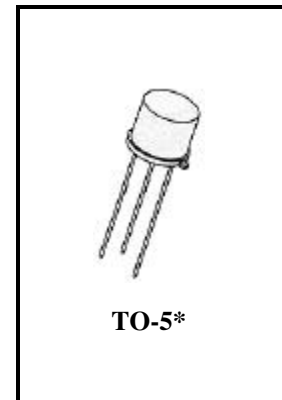
*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage $R_{BE} = 10\ \Omega$, $I_C = 100$ mAdc		$V_{(BR)CER}$	40		Vdc
Collector-Base Cutoff Current $V_{CB} = 100$ Vdc $V_{CB} = 30$ Vdc		I_{CBO}		10 0.1	μAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0$ Vdc		I_{EBO}		10	μAdc
ON CHARACTERISTICS [(3)]					
Forward-Current Transfer Ratio $I_C = 150$ mAdc, $V_{CE} = 10$ Vdc	2N696,s 2N697,s	h_{FE}	20 40	60 120	
$I_C = 500$ mAdc, $V_{CE} = 10$ Vdc	2N696,s 2N697,s		12.5 20.0		
Collector-Emitter Saturation Voltage $I_C = 150$ mAdc, $I_B = 15$ mAdc		$V_{CE(sat)}$	0.3	1.5	Vdc
Base-Emitter Saturation Voltage $I_C = 150$ mAdc, $I_B = 15$ mAdc		$V_{BE(sat)}$		1.3	Vdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio $I_C = 50$ mAdc, $V_{CE} = 10$ Vdc; f = 20 MHz 2N696,s 2N697,s	$\lvert h_{fe} \rvert$	2.5 3.0	10 12	
Output Capacitance $V_{CB} = 10$ Vdc, $I_E = 0$, 100 kHz $\leq$ f $\leq$ 1.0 MHz	C_{obo}	2.0	25	pF
SWITCHING CHARACTERISTICS				
Turn-On Time (See Figure 3 of MIL-PRF-19500/ 99)	t_{on}		200	ηs
Turn-Off Time (See Figure 4 of MIL-PRF-19500/99)	t_{off}		1,000	ηs

(3) Pulse Test: Pulse Width 250 to 350µs, Duty Cycle $\leq$ 2.0%.