

NPN MEDIUM POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/99

Devices

2N696
2N696S

2N697
2N697S

Qualified Level

JAN

MAXIMUM RATINGS

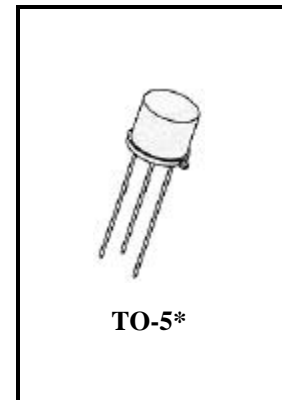
Ratings	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Total Power Dissipation @ $T_A = 25^{\circ}\text{C}$ ⁽¹⁾ @ $T_C = 25^{\circ}\text{C}$ ⁽²⁾	P_T	0.6 2.0	W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

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

1) Derate linearly 4.0 mW/ $^{\circ}\text{C}$ for $T_A > 25^{\circ}\text{C}$

2) Derate linearly 13.3 mW/ $^{\circ}\text{C}$ for $T_C > 25^{\circ}\text{C}$



*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $R_{BE} = 10 \Omega, I_C = 100 \text{ mAdc}$	$V_{(BR)CER}$	40		Vdc
Collector-Base Cutoff Current $V_{CB} = 100 \text{ Vdc}$ $V_{CB} = 30 \text{ Vdc}$	I_{CBO}		10 0.1	μAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$	I_{EBO}		10	μAdc

ON CHARACTERISTICS ⁽³⁾

Forward-Current Transfer Ratio $I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N696,s 2N697,s	h_{FE}	20 40	60 120	
$I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	2N696,s 2N697,s		12.5 20.0		
Collector-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$	$V_{CE(sat)}$	0.3	1.5	Vdc	
Base-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$	$V_{BE(sat)}$		1.3	Vdc	

2N696, 2N696s, 2N697, 2N697s SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio $I_C = 50 \text{ mA dc}, V_{CE} = 10 \text{ V dc}; f = 20 \text{ MHz}$	$ h_{fe} $	2N696,s 2N697,s	2.5 3.0	10 12	
Output Capacitance $V_{CB} = 10 \text{ V dc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		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 350 μs , Duty Cycle $\leq 2.0\%$.