

TECHNICAL DATA
DATA SHEET 4140, REV. -

SMALL SIGNAL TRANSISTOR

DESCRIPTION: SINGLE PNP SMALL SIGNAL TRANSISTOR IN AN LCC-4 PACKAGE

MAXIMUM RATINGS

(ALL RATINGS ARE AT $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE SPECIFIED).

RATING	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Collector-Emitter Voltage (V_{CE0})	-	-	-	-175	Vdc
Collector-Base Voltage (V_{CBO})	-	-	-	-175	Vdc
Emitter-Base Voltage (V_{EBO})	-	-	-	-5.0	Vdc
Collector Current-Continuous (I_C)	-	-	-	-1	Adc
Total Power Dissipation P_D @ $T_A = 25^\circ\text{C}$ Derate above 25°C	-	-	-	1 5.71	W mW/ $^\circ\text{C}$
Total Power Dissipation P_D @ $T_C = 25^\circ\text{C}$ Derate above 25°C	-	-	-	5 28.6	W mW/ $^\circ\text{C}$
Thermal Resistance Junction to Case $R\theta_{JC}$	-	-	-	35	$^\circ\text{C}/\text{W}$
Operating Junction & Storage Temp (T_J & T_{stg})	-	-65	-	+200	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS

(ALL ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$)

OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage $V_{(BR)CEO(1)}$	$I_C = -10\text{mAdc}, I_B = 0$	-175	-	-	-	Vdc
Collector-Base Breakdown Voltage $V_{(BR)CBO}$	$I_C = -10\mu\text{Adc}, I_E = 0$	-175	-	-	-	Vdc
Emitter-Base Breakdown Voltage $V_{(BR)EBO}$	$I_E = -10\mu\text{Adc}, I_C = 0$	-5.0	-	-	-	Vdc
Emitter Cutoff Current (I_{EBO})	$V_{BE} = -3.0\text{V} \mid I_C = 0$	-	-	-50	-	nA
Collector Cutoff Current (I_{CBO})	$V_{CB} = -100\text{V} \mid I_E = 0$	-	-	-100	-	nA
ON CHARACTERISTICS						
DC Current Gain (h_{FE}) $V_{CE} = -10\text{Vdc}(1)$	$I_C = 0.1 \text{ mAdc}$	55	-	-	-	
	$I_C = 1 \text{ mAdc}$	90	-	-	-	
	$I_C = -10 \text{ mAdc}$	100	-	-	-	-
	$I_C = -50 \text{ mAdc}$	100	-	-	300	
	$I_C = -150 \text{ mAdc}$	60	-	-	-	
Collector-Emitter Saturation Voltage(1) $V_{CE(sat)}$	$(I_C = -10\text{mAdc}, I_B = -1\text{mAdc})$	-	-	-	-0.3	Vdc
	$(I_C = -50\text{mAdc}, I_B = -5\text{mAdc})$	-	-	-	-0.6	
Base-Emitter Saturation Voltage (1) $V_{BE(sat)}$	$(I_C = -10\text{mAdc}, I_B = -1\text{mAdc})$	-0.65	-	-	-0.8	Vdc
	$(I_C = -50\text{mAdc}, I_B = -5\text{mAdc})$	-	-	-	-0.9	

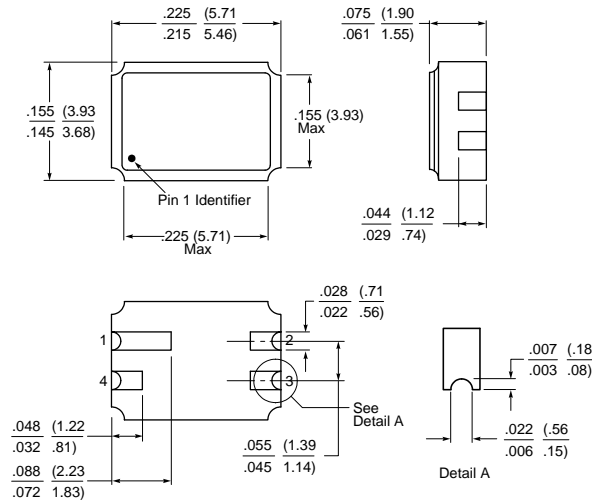
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RATING	CONDITIONS	MIN.	TYP.	MAX.	UNITS
DYNAMIC CHARACTERISTICS					
Current Gain, Bandwidth (2) (f _T)	V _{CE} = -30Vdc, I _C = -30mAdc, f = 100MHz	200	-	-	MHz
Output Capacitance (C _{obo})	V _{CB} = -20Vdc, I _E = 0, 100 kHz < f < 1MHz	-	-	10	pF
Input Capacitance (C _{ibo})	V _{EB} = -1.0 Vdc, I _C = 0, 100 kHz < f < 1MHz	-	-	75	pF
SMALL-SIGNAL CHARACTERISTICS					
Delay Time (t _d)	Conditions as in Mil-PRF-19500/357G	-	-	100	ns
Rise Time (t _r)		-	-	100	
Turn-Off Time (t _{off})		-	-	600	
Storage Time (t _s)		-	-	500	
Fall Time (t _f)		-	-	150	

(1) Pulsed. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

(2) f_T = |h_{fe}| • f_{test}

MECHANICAL DIMENSIONS - in inches / mm



LCC-4

PIN ASSIGNMENTS

DEVICE TYPE	PIN 1	PIN 2	PIN 3	PIN 4
PNP Transistor in a LCC-4 Package	COLLECTOR	EMITTER	BASE	N/C