T-33-17

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

MPS-U60

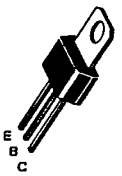
NOT RECOMMENDED FOR NEW DESIGNS

SILICON ANNULAR TRANSISTOR

Designed for general-purpose applications requiring high breakdown voltages, low saturation voltages and low capacitance.

Complement to NPN Type MPS-U10

PNP SILICON HIGH VOLTAGE TRANSISTOR



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	300	Vdc
Collector-Base Voltage	V_{CB}	300	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current – Continuous	I_C	500	mAdc
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.0 8.0	Watt mW/°C
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	10 80	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

THERMAL CHARACTERISTICS

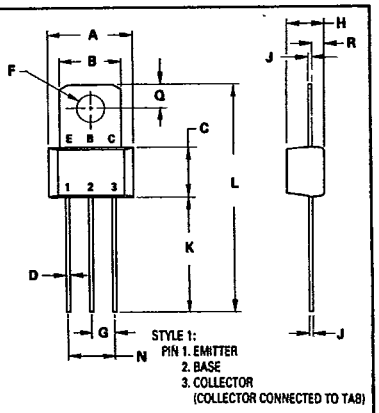
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	12.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$(1)	125	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector Emitter Breakdown Voltage (2) (I_C = 1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	300	–	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	300	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	5.0		Vdc
Collector Cutoff Current (V_{CB} = 200 Vdc, I_E = 0)	I_{CBO}	–	0.2	μAdc
Emitter Cutoff Current (V_{BE} = 3.0 Vdc, I_C = 0)	I_{EBO}	–	0.1	μAdc
ON CHARACTERISTICS				
DC Current Gain (2) (I_C = 1.0 mAdc, V_{CE} = 10 Vdc) (I_C = 10 mAdc, V_{CE} = 10 Vdc) (I_C = 30 mAdc, V_{CE} = 10 Vdc)	h_{FE}	25 30 30	– – –	–
Collector-Emitter Saturation Voltage (I_C = 20 mAdc, I_B = 2.0 mAdc)	$V_{CE(sat)}$	–	0.75	Vdc
Base Emitter Saturation Voltage (I_C = 20 mAdc, I_B = 2.0 mAdc)	$V_{BE(sat)}$	–	0.9	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain–Bandwidth Product (2) (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	f_T	60	–	MHz
Collector Base Capacitance (V_{CB} = 20 Vdc, I_E = 0, f = 1.0 MHz)	C_{cb}	–	8.0	pF

(1) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

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



NOTE:
1. LEADS WITHIN 0.15 mm(0.006) TOTAL OF TRUE POSITION AT CASE, AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	9.14	9.53	0.360	0.375
B	6.60	7.24	0.260	0.285
C	5.41	5.66	0.213	0.223
D	0.38	0.53	0.015	0.021
F	3.18	3.33	0.125	0.131
G	2.54 BSC		0.100 BSC	
H	3.94	4.19	0.155	0.165
J	0.38	0.41	0.014	0.016
K	11.63	12.70	0.458	0.500
L	24.58	25.53	0.968	1.005
N	5.08 BSC		0.200 BSC	
Q	2.39	2.69	0.094	0.106
R	1.14	1.40	0.045	0.055

CASE 152-02

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FIGURE 1 – DC CURRENT GAIN

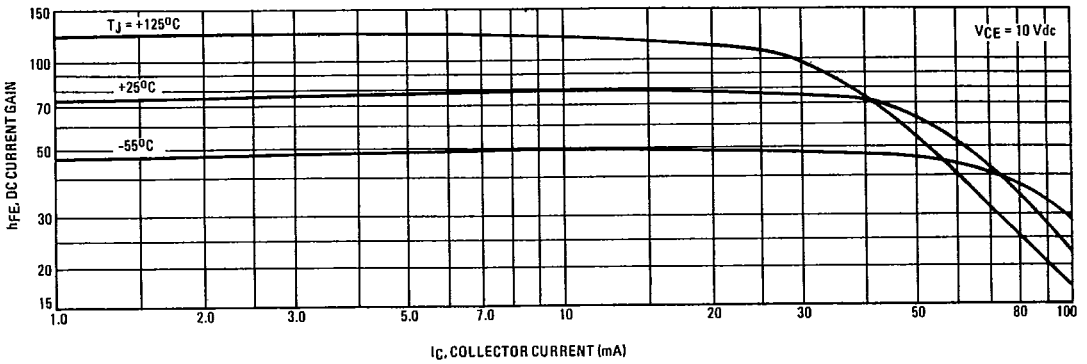

FIGURE 2 – CAPACITANCES

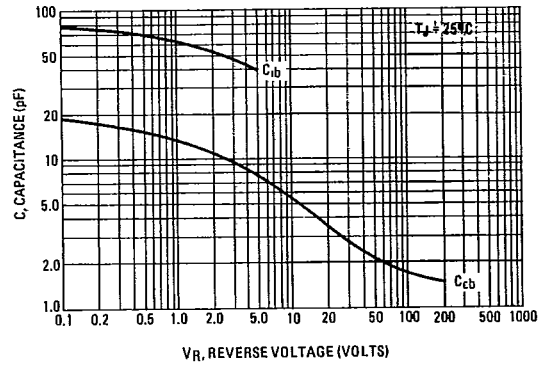

FIGURE 3 – CURRENT-GAIN–BANDWIDTH PRODUCT

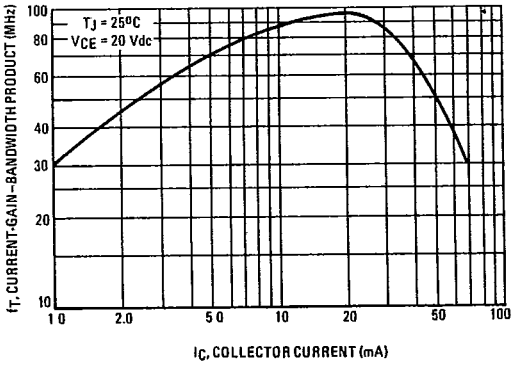

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FIGURE 4 – "ON" VOLTAGES

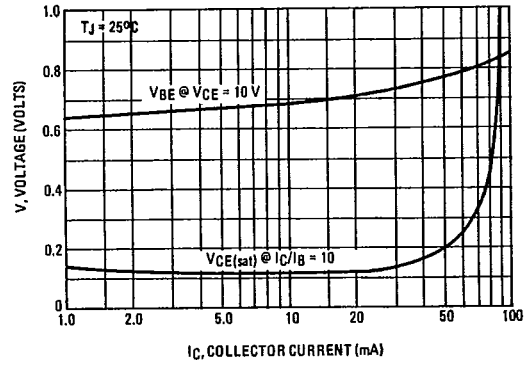

FIGURE 5 – DC SAFE OPERATING AREA