

MPS-U55 (SILICON) MPS-U56

PNP SILICON ANNULAR AMPLIFIER TRANSISTORS

... designed for general-purpose, high-voltage amplifier and driver applications.

- High Collector-Emitter Breakdown Voltage –
 $V_{CE0} = 60 \text{ Vdc (Min) @ } I_C = 1.0 \text{ mAdc - MPS-U55}$
 $80 \text{ Vdc (Min) @ } I_C = 1.0 \text{ mAdc - MPS-U56}$
- High Power Dissipation – $P_D = 10 \text{ W @ } T_C = 25^\circ\text{C}$
- Complements to NPN MPS-U05 and MPS-U06

PNP SILICON AMPLIFIER TRANSISTORS

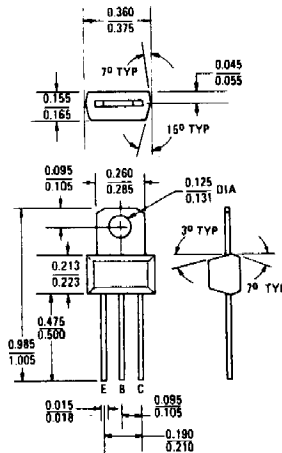


MAXIMUM RATINGS

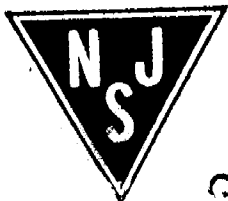
Rating	Symbol	MPS-U55	MPS-U56	Unit
Collector-Emitter Voltage	V_{CE0}	60	80	Vdc
Collector-Base Voltage	V_{CB}	60	80	Vdc
Emitter-Base Voltage	V_{EB}	4.0		Vdc
Collector Current – Continuous	I_C	2.0		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0	8.0	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	10	80	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	12.5	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	θ_{JA}	125	$^\circ\text{C/W}$



Collector Connected



New Jersey Semi-Conductor Products, Inc.

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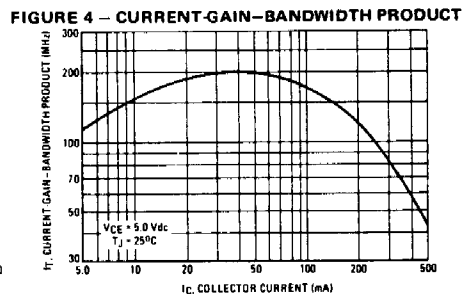
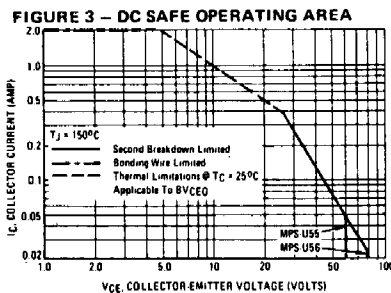
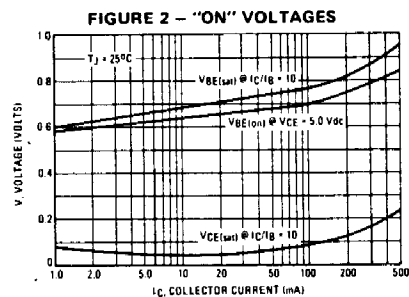
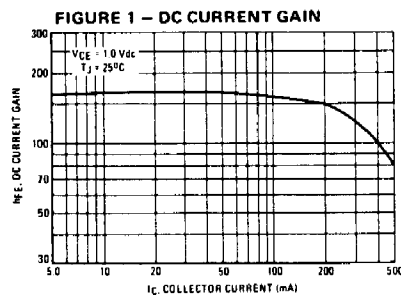
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MPS-U55, MPS-U56 (continued)

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	BV_{CEO}	60 80	— —	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$)	BV_{EBO}	4.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 40 \text{ Vdc}, I_E = 0$) ($V_{CB} = 60 \text{ Vdc}, I_E = 0$)	I_{CBO}	— —	— —	100 100	nAdc
ON CHARACTERISTICS					
DC Current Gain (1) ($I_C = 50 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 250 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$)	h_{FE}	80 50 —	160 130 80	— — —	—
Collector-Emitter Saturation Voltage(1) ($I_C = 250 \text{ mAdc}, I_B = 10 \text{ mAdc}$) ($I_C = 250 \text{ mAdc}, I_B = 25 \text{ mAdc}$)	$V_{CE(sat)}$	— —	0.22 0.15	0.5 —	Vdc
Base-Emitter On Voltage (1) ($I_C = 250 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	$V_{BE(on)}$	—	0.78	1.2	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product ($I_C = 200 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 100 \text{ MHz}$)	f_T	50	100	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$)	C_{ob}	—	10	15	pF

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



There are two limitations on the power handling ability of a transistor: junction temperature and secondary breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 3 is based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown.



Quality Semi-Conductors