

# MPS-U52

PNP silicon annular amplifier transistors designed for general-purpose amplifier and driver applications. Complement to NPN MPS-U52



CASE 152

### MAXIMUM RATINGS- Collector connected to tab

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	40	Vdc
Collector-Base Voltage	$V_{CB}$	60	Vdc
Emitter-Base Voltage	$V_{EB}$	5.0	Vdc
Collector Current - Continuous	$I_C$	800	mA <sub>dc</sub>
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D^{(1)}$	1.0 9.1	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D^{(1)}$	6.0 54.5	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}^{(1)}$	-55 to +135	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}^{(1)}$	18.3	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	$\theta_{JA}^{(1)}$	0.110	$^\circ\text{C}/\text{mW}$

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

Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mA}_{dc}, I_B = 0$ )	$BV_{CEO}$	40	-	Vdc
Collector-Base Breakdown Voltage ( $I_C = 100 \mu\text{A}_{dc}, I_E = 0$ )	$BV_{CBO}$	60	-	Vdc
Collector Cutoff Current ( $V_{CB} = 40 \text{ Vdc}, I_E = 0$ )	$I_{CBO}$	-	100	nA <sub>dc</sub>

### ON CHARACTERISTICS

DC Current Gain ( $I_C = 10 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$ ) ( $I_C = 150 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$ ) ( $I_C = 500 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$ )	$h_{FE}$	50 50 30	- 300 -	
Collector-Emitter Saturation Voltage ( $I_C = 150 \text{ mA}_{dc}, I_B = 15 \text{ mA}_{dc}$ )	$V_{CE(sat)}$	-	0.4	Vdc
Base-Emitter Saturation Voltage ( $I_C = 150 \text{ mA}_{dc}, I_B = 15 \text{ mA}_{dc}$ )	$V_{BE(sat)}$	-	1.3	Vdc

### DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ( $I_C = 20 \text{ mA}_{dc}, V_{CE} = 20 \text{ Vdc}, f = 100 \text{ MHz}$ )	$f_T$	150	-	MHz
Output Capacitance ( $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$ )	$C_{ob}$	-	20	pF

(1) Continuous package improvements have enhanced these guaranteed Maximum Ratings as follows:  $P_D = 1.0 \text{ W}$  @  $T_A = 25^\circ\text{C}$ , Derate above  $8.0 \text{ mW}/^\circ\text{C}$ .  $P_D = 10 \text{ W}$  @  $T_C = 25^\circ\text{C}$ , Derate above  $80 \text{ mW}/^\circ\text{C}$ .  $T_J, T_{stg} = -55 \text{ to } +150^\circ$ .  $\theta_{JC} = 12.5^\circ\text{C}/\text{W}$ .  $\theta_{JA} = 125^\circ\text{C}$ .

Uniwatt packages can be To-5 lead formed by adding -5 to the device title and tab formed for flush mounting by adding -1 to the device title.

