

MPS-U03
MPS-U04

**NPN SILICON
 AMPLIFIER
 TRANSISTORS**



MAXIMUM RATINGS				
Rating	Symbol	MPS-U03	MPS-U04	Unit
Collector-Emitter Voltage	V_{CE0}	120	180	Vdc
Collector-Base Voltage	V_{CB}	120	180	Vdc
Emitter-Base Voltage	V_{EB}	5		Vdc
Collector Current	I_C	1		Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	1	8	Watts mW/ $^\circ\text{C}$
Total Power 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		$^\circ\text{C}$
Solder Temperature, 1/16" From Case for 10 Seconds	-	260		$^\circ\text{C}$

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

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 ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	MPS-U03 MPS-U04	$V_{(BR)CEO}$	120 180	- -	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$)	MPS-U03 MPS-U04	$V_{(BR)CBO}$	120 180	- -	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	5.0	-	Vdc
Collector Cutoff Current ($V_{CB} = 100 \text{ Vdc}, I_E = 0$) ($V_{CB} = 150 \text{ Vdc}, I_E = 0$)	MPS-U03 MPS-U04	I_{CBO}	- -	0.1 0.1	μAdc

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$)		h_{FE}	40	-	-
Collector-Emitter Saturation Voltage ($I_C = 200 \text{ mAdc}, I_B = 20 \text{ mAdc}$)		$V_{CE(sat)}$	-	0.5	Vdc
Base-Emitter On Voltage ($I_C = 200 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$)		$V_{BE(on)}$	-	1.0	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 50 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}, f = 20 \text{ MHz}$)		f_T	35	-	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$)		C_{ob}	-	12	pF
Input Capacitance ($V_{BE} = 0.5 \text{ Vdc}, I_C = 0, f = 100 \text{ kHz}$)		C_{ib}	-	110	pF

(1) Pulse Test: Pulse Width < 300 μs , Duty Cycle < 2.0%.