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MPS3704 thru MPS3706

CASE 29-02, STYLE 1
TO-92 (TO-226AA)

AMPLIFIER TRANSISTOR

NPN SILICON

Refer to 2N4400 for graphs.

MAXIMUM RATINGS

Rating	Symbol	MPS3704 MPS3705	MPS3706	Unit
Collector-Emitter Voltage	V_{CEO}	30	20	Vdc
Collector-Base Voltage	V_{CBO}	50	40	Vdc
Emitter-Base Voltage	V_{EBO}	5		Vdc
Collector Current — Continuous	I_C	600		mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	625 5.0		mW 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 Ambient	$R_{\theta JA}$	200	°C/W

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) (I_C = 10 mAdc, I_E = 0)	MPS3704 MPS3705 MPS3706	$V_{(BR)CEO}$	 30 30 20	 — — —	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	MPS3704 MPS3705 MPS3706	$V_{(BR)CBO}$	 50 50 40	 — — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current (V_{CB} = 20 Vdc, I_E = 0)		I_{CBO}	—	100	nAdc
Emitter Cutoff Current (V_{BE} = 3.0 Vdc, I_C = 0)		I_{EBO}	—	100	nAdc
ON CHARACTERISTICS					
DC Current Gain(1) (I_C = 50 mAdc, V_{CE} = 2.0 Vdc)	MPS3704 MPS3705 MPS3706	h_{FE}	 100 50 30	 300 150 600	—
Collector-Emitter Saturation Voltage(1) (I_C = 100 mAdc, I_B = 5.0 mAdc)	MPS3704 MPS3705 MPS3706	$V_{CE(sat)}$	 — — —	 0.6 0.8 1.0	Vdc
Base-Emitter On Voltage(1) (I_C = 100 mAdc, V_{CE} = 2.0 Vdc)		$V_{BE(on)}$	0.5	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 50 mAdc, V_{CE} = 2.0 Vdc, f = 20 MHz)		f_T	100	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{obo}	—	12	pF

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