2N5002 AND 2N5004
5 AMP
HIGH SPEED NPN TRANSISTOR
100 VOLTS

14830 Valley View Avenue
La Mirada, California 90638
(213) 921-9660
TWX 910-583-4807
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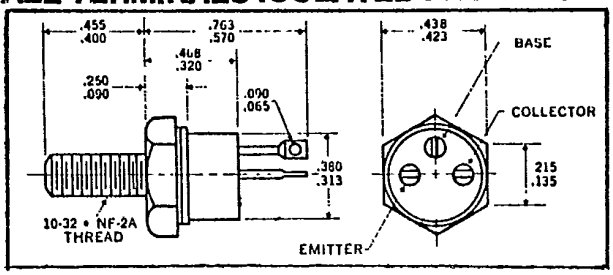
CASE STYLE X
JEDEC TO-59
ALL TERMINALS ISOLATED FROM CASE



FEATURES

- RADIATION TOLERANT
- FAST SWITCHING, TYPICAL 200 NSEC ton
- HIGH FREQUENCY, TYPICAL f_T 100 MHZ
- BVCEO 80 VOLTS MIN
- HIGH LINEAR GAIN, LOW SATURATION VOLTAGE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- DESIGNED FOR COMPLEMENTARY USE WITH 2N5003 AND 2N5005

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V_{CEO}	80	Volts
Collector - Base Voltage	V_{CBO}	100	Volts
Emitter - Base Voltage	V_{EBO}	6	Volts
Collector Current	I_C	5	Amps
Base Current	I_B	2	Amps
Total Device Dissipation @ TC = 50 °C	P_D	50	Watts
Derate above 50 °C		333	mW/°C
Operating and Storage Temperature	Tj, Tstg	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	RθJC	3.0	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage* (I_C = 100 mAdc)	BV_{CEO}*	80		Vdc
Collector - Base Breakdown Voltage (I_C = 200 uAdc)	BV_{CBO}	100		Vdc
Emitter - Base Breakdown Voltage (I_E = 200 uAdc)	BV_{EBO}	6		Vdc

NOTE: All specifications subject to change without notice.

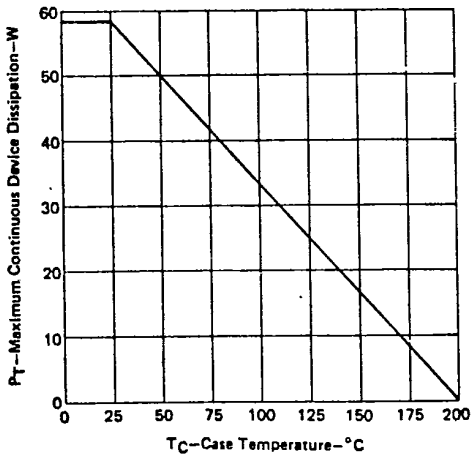
ELECTRICAL CHARACTERISTICS

Characteristics		Symbol	Min.	Max.	Unit
Collector Cutoff Current (VCE = 60 Vdc, VBE = 2 Vdc, TC = 150°C) (VCE = 40 Vdc)		I_{CEV} I_{CEO}		500 50	uAdc uAdc
Collector Cutoff Current (VCE = 60 Vdc) (VCE = 100 Vdc)		I_{CES}		1.0 1.0	uAdc mAdc
Emitter Cutoff Current (VEB = 5 Vdc) (VEB = 6 Vdc)		I_{EBO}		1.0 1.0	uAdc mAdc
DC Current Gain*	2N5002 2N5004	h_{FE}*	20 50		
(I_C = 50 mAdc, V_{CE} = 5 Vdc)	2N5002		30	90	
(I_C = 2.5 Adc, V_{CE} = 5 Vdc)	2N5004		70	200	
(I_C = 5 Adc, V_{CE} = 5 Vdc)	2N5002 2N5004		20 40		
Collector - Emitter Saturation Voltage* (I_C = 2.5 Adc, I_B = 250 mAdc) (I_C = 5 Adc, I_B = 500 mAdc)		$V_{CE(SAT)}$*		0.75 1.5	Vdc
Base - Emitter Saturation Voltage* (I_C = 2.5 Adc, I_B = 250 mAdc) (I_C = 5 Adc, I_B = 500 mAdc)		$V_{BE(SAT)}$*		1.45 2.2	Vdc
Current - Gain - Bandwith Product (I_C = 500 mAdc V_{CE} = 5 Vdc, f = 20 MHz)	2N5002 2N5004	f_T	60 70		M Hz
Output Capacitance (V_{CB} = 10 Vdc I_E = 0, f = 1 MHz)		C_{ob}		250	pf
Base - Emitter Voltage* (V_{CE} = 5 Vdc, I_C = 2.5 Adc)		$V_{BE(ON)}$*		1.45	Vdc
Delay Time Rise Time	(V_{CC} = 30 Vdc, I_C = 5 Adc, $V_{EB(Off)}$ = 3.7 Vdc, I_{B1} = I_{B2} = 500 mAdc, R_L = 6 Ohms) (t_{on})	t_d + t_r		500	ns
Storage Time Fall Time	(t_{off})	t_s + t_f		1.3	us

*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

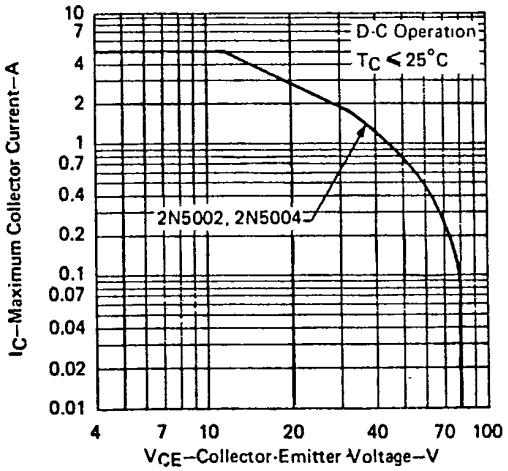
TYPICAL OPERATING CURVES

DISSIPATION DERATING CURVE



FORWARD BIAS DC SAFE OPERATION AREA (S.O.A. CURVE)

CURVES APPLY BELOW RATED V_{CEO} T_C = 25°C



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