NPN Silicon High-Voltage Power Transistors

- ... designed for use in line-operated equipment requiring high ft.
- High DC Current Gain

 $h_{FE} = 40 - 160 @ I_{C} = 20 mAdc$

- Current Gain Bandwidth Product
 - fT = 15 MHz (Min) @ IC = 10 mAdc
- Low Output Capacitance

 $C_{ob} = 10 \text{ pF (Max) } @ f = 1.0 \text{ MHz}$

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	VCEO	350	Vdc
Collector-Base Voltage	VCB	450	Vdc
Emitter-Base Voltage	V _{EB}	5.0	Vdc
Collector Current — Continuous	IC	0.3	Adc
Base Current	ΙΒ	150	mAdc
Total Power Dissipation @ T _C = 25°C Derate above 25°C	P _D	15 0.12	Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θJC	8.33	°C/W

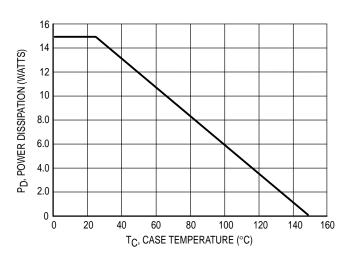
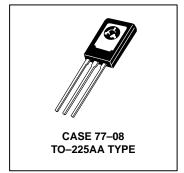


Figure 1. Power-Temperature Derating Curve

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0.3 AMPERE
POWER TRANSISTOR
NPN SILICON
350 VOLTS
15 WATTS



ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Characteristic Symbol		Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Sustaining Voltage (I _C = 5.0 mAdc, I _B = 0)	VCEO(sus)	350	_	Vdc
Collector Cutoff Current (VCE = 300 Vdc, I _B = 0)	ICEO	_	20	μAdc
Collector Cutoff Current (VCE = 450 Vdc, VEB(off) = 1.5 Vdc)	ICEX	_	500	μAdc
Collector Cutoff Current (V _{CB} = 350 Vdc, I _E = 0)	ІСВО	_	20	μAdc
Emitter Cutoff Current (VBE = 5.0 Vdc, I _C = 0)	I _{EBO}	_	20	μAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 2.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 20 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$)	h _{FE}	30 15	 200	_
Collector–Emitter Saturation Voltage (I _C = 50 mAdc, I _B = 4.0 mAdc)	VCE(sat)	_	0.5	Vdc
Base–Emitter Saturation Voltage (I _C = 50 mAdc, I _B = 4.0 mAdc)	VBE(sat)	_	1.3	Vdc
Base–Emitter On Voltage (IC = 50 mAdc, VCE = 10 Vdc)	V _{BE(on)}	_	0.8	Vdc
DYNAMIC CHARACTERISTICS			•	•
Current–Gain — Bandwidth Product (I _C = 10 mAdc, V _{CE} = 10 Vdc, f = 5.0 MHz)	f _T	15	_	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C _{ob}	_	10	pF
Small–Signal Current Gain (I _C = 5.0 mAdc, V _{CE} = 10 Vdc, f = 1.0 kHz)	h _{fe}	25	_	

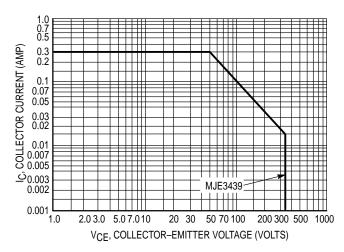
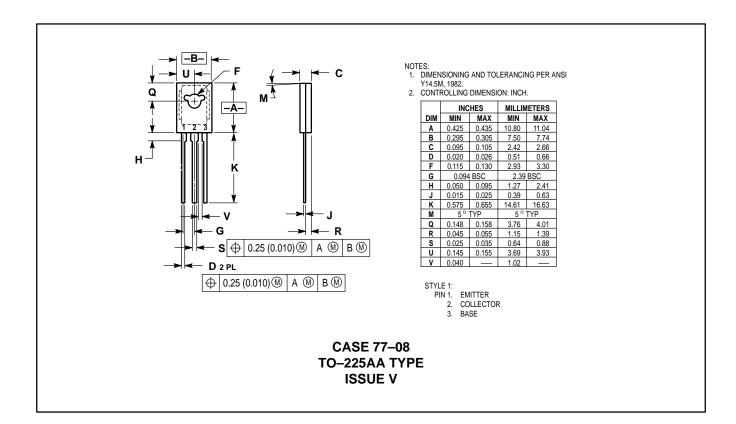


Figure 2. Active-Region Safe Operating Area

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power–temperature derating must be observed for both steady state and pulse power conditions.

PACKAGE DIMENSIONS



MJE3439

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