MJE344G

Plastic NPN Silicon Medium-Power Transistor

This device is useful for medium voltage applications requiring high f_T such as converters and extended range amplifiers.

Features

- These Devices are Pb−Free and are RoHS Compliant*

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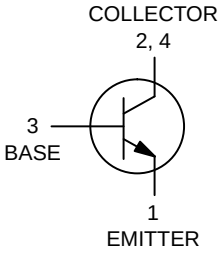
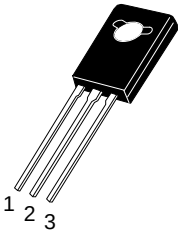
0.5 AMPERE
POWER TRANSISTORS
NPN SILICON
150−200 VOLTS, 20 WATTS





TO−225
CASE 77−09
STYLE 1

MAXIMUM RATINGS

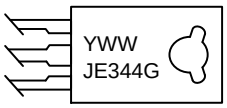
Rating	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	200	Vdc
Collector−Base Voltage	V_{CB}	200	Vdc
Emitter Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous	I_C	500	mAdc
Base Current	I_B	250	mAdc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	 20 0.16	 W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	θ_{JC}	6.25	°C/W

MARKING DIAGRAM



Y = Year
WW = Work Week
JE344 = Device Code
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
MJE344G	TO−225 (Pb−Free)	500 Units/Box

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (I_C = 1.0 mAdc, I_B = 0)	$V_{CEO(sus)}$	200	−	Vdc
Collector Cutoff Current (V_{CE} = 200 Vdc, I_B = 0)	I_{CEO}	−	1.0	mAdc
Collector Cutoff Current (V_{CB} = 200 Vdc, I_E = 0)	I_{CBO}	−	0.1	mAdc
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	I_{EBO}	−	0.1	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 50 mAdc, V_{CE} = 10 Vdc)	h_{FE}	30	300	−
Collector−Emitter Saturation Voltage (I_C = 50 mAdc, I_B = 5.0 mAdc)	$V_{CE(sat)}$	−	1.0	Vdc
Base−Emitter On Voltage (I_C = 50 mAdc, V_{CE} = 10 Vdc)	$V_{BE(on)}$	−	1.0	Vdc
DYNAMIC CHARACTERISTICS				
Current−Gain − Bandwidth Product (I_C = 50 mAdc, V_{CE} = 25 Vdc, f = 10 MHz)	f_T	15	−	MHz
Output Capacitance (V_{CB} = 20 Vdc, I_E = 0, f = 100 kHz)	C_{ob}	−	15	pF
Small−Signal Current Gain (I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)	h_{fe}	25	−	−

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

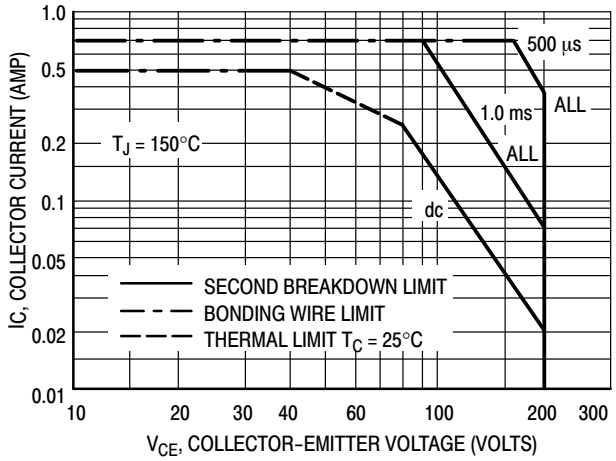


Figure 1. Active Region Safe Operating Area

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation then the curves indicate.

The data of Figure 1 is based on $T_{J(pk)}$ = 150°C; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150°C$. At high case temperatures, thermal limitations will reduce the power that can be handled to values less then the limitations imposed by second breakdown.

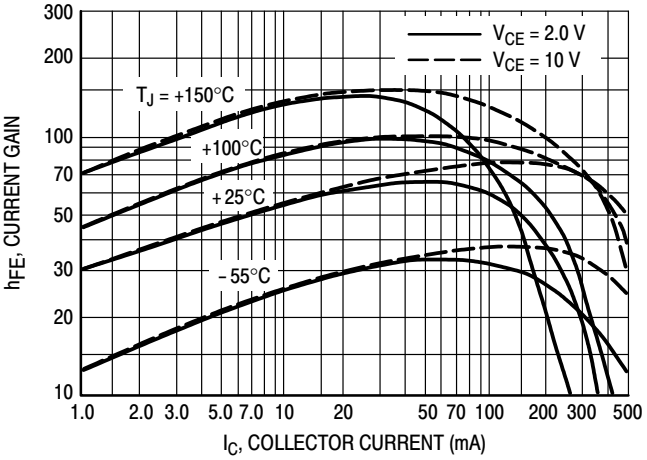


Figure 2. DC Current Gain

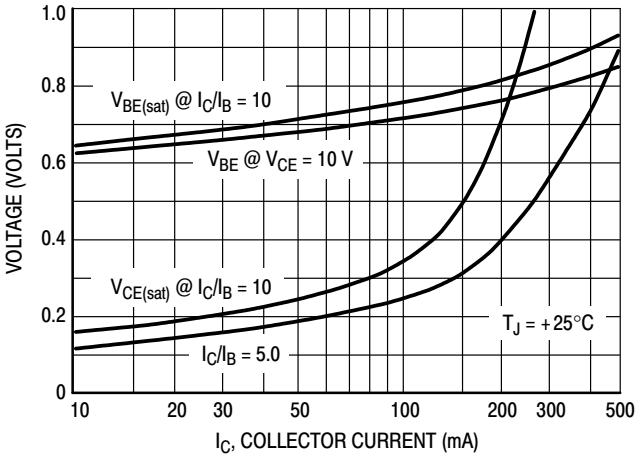


Figure 3. “On” Voltages

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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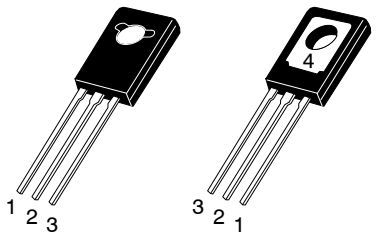
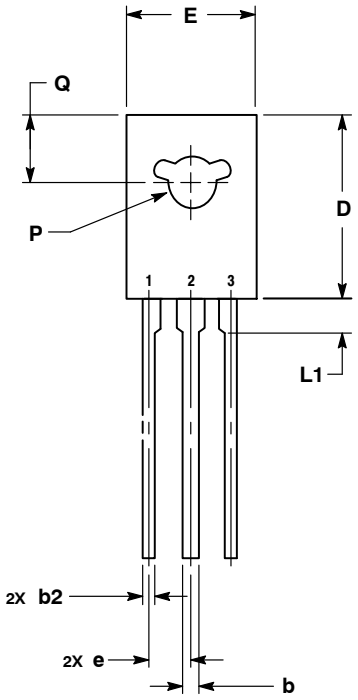
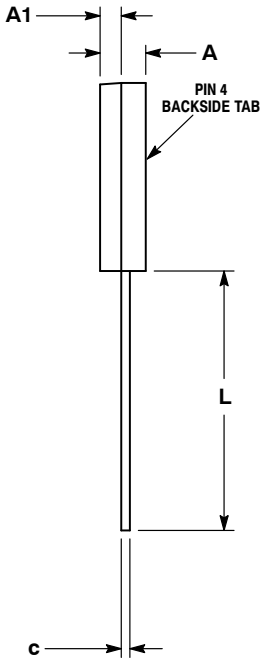


FRONT VIEW **BACK VIEW**

SCALE 1:1



FRONT VIEW

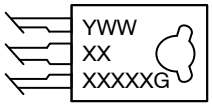


SIDE VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

	MILLIMETERS	
DIM	MIN	MAX
A	2.40	3.00
A1	1.00	1.50
b	0.60	0.90
b2	0.51	0.88
c	0.39	0.63
D	10.60	11.10
E	7.40	7.80
e	2.04	2.54
L	14.50	16.63
L1	1.27	2.54
P	2.90	3.30
Q	3.80	4.20

GENERIC MARKING DIAGRAM*



Y = Year
WW = Work Week
XXXXX = Device Code
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE

STYLE 2:
PIN 1. CATHODE
2., 4. ANODE
3. GATE

STYLE 3:
PIN 1. BASE
2., 4. COLLECTOR
3. EMITTER

STYLE 4:
PIN 1. ANODE 1
2., 4. ANODE 2
3. GATE

STYLE 5:
PIN 1. MT 1
2., 4. MT 2
3. GATE

STYLE 6:
PIN 1. CATHODE
2., 4. GATE
3. ANODE

STYLE 7:
PIN 1. MT 1
2., 4. GATE
3. MT 2

STYLE 8:
PIN 1. SOURCE
2., 4. GATE
3. DRAIN

STYLE 9:
PIN 1. GATE
2., 4. DRAIN
3. SOURCE

STYLE 10:
PIN 1. SOURCE
2., 4. DRAIN
3. GATE

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