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MAXIMUM RATINGS				
Rating	Symbol	MJ10015	MJ10016	Unit
Collector-Emitter Voltage	V _{CEO}	400	500	Vdc
Collector-Emitter Voltage	V _{CEV}	600	700	Vdc
Emitter Base Voltage	V _{EB}	8.0		Vdc
Collector Current - Continuous	I _C	50		Adc
- Peak (1)	I _{CM}	75		
Base Current - Continuous	I _B	10		Adc
- Peak (1)	I _{BM}	15		
Total Power Dissipation @ T _C = 25°C	P _D	250		Watts
@ T _C = 100°C		143		
Derate above 25°C		1.43		W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-66 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	0.7	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T _L	275	°C

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle ≤ 10%

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS (1)					
Collector-Emitter Sustaining Voltage (Table 1) (I _C = 100 mA, I _B = 0, V _{clamp} = Rated V _{CEO})	V _{CEO(sus)}	400	-	-	Vdc
		500	-	-	
Collector Cutoff Current (V _{CEV} = Rated Value, V _{BE(off)} = 1.5 Vdc)	I _{CEV}	-	-	0.25	mA _{dc}
Emitter Cutoff Current (V _{EB} = 2.0 Vdc, I _C = 0)	I _{EBO}	-	-	350	mA _{dc}

SECOND BREAKDOWN

Second Breakdown Collector Current with Base Forward Biased	I _{S/b}	See Figure 7		
Clamped inductive SOA with Base Reverse Biased	RBSOA	See Figure 8		

ON CHARACTERISTICS (1)

DC Current Gain (I _C = 20 Adc, V _{CE} = 5.0 Vdc) (I _C = 40 Adc, V _{CE} = 5.0 Vdc)	h _{FE}	25	-	-	-
		10	-	-	
Collector-Emitter Saturation Voltage (I _C = 20 Adc, I _B = 1.0 Adc) (I _C = 50 Adc, I _B = 10 Adc)	V _{CE(sat)}	-	-	2.2	Vdc
		-	-	5.0	
Base-Emitter Saturation Voltage (I _C = 20 Adc, I _B = 1.0 Adc)	V _{BE(sat)}	-	-	2.75	Vdc
Diode Forward Voltage (2) (I _F = 20 Adc)	V _F	-	2.5	6.0	Vdc

DYNAMIC CHARACTERISTIC

Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f _{test} = 100 kHz)	C _{ob}	-	-	750	pF
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SWITCHING CHARACTERISTICS

Resistive Load (Table 1)						
Delay Time	(V _{CC} = 250 Vdc, I _C = 20 A, I _{B1} = 1.0 Adc, V _{BE(off)} = 5 Vdc, t _p = 25 μs, Duty Cycle ≤ 2%)	t _d	-	0.14	0.3	μs
Rise Time		t _r	-	0.3	1.0	μs
Storage Time		t _s	-	0.8	2.5	μs
Fall Time		t _f	-	0.3	1.0	μs
Inductive Load, Clamped (Table 1)						
Storage Time	(I _C = 20 A(pk), V _{clamp} = 250 V, I _{B1} = 1.0 A,	t _{sv}	-	1.0	2.5	μs
Crossover Time	V _{BE(off)} = 5.0 Vdc)	t _c	-	0.36	1.0	μs

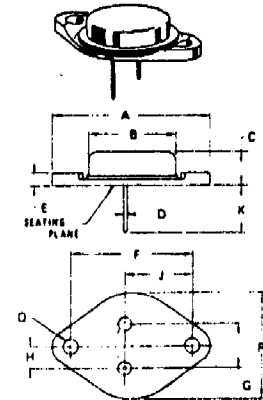
(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%

(2) The internal Collector-to-Emitter diode can eliminate the need for an external diode to clamp inductive loads. Tests have shown that the Forward Recovery Voltage (V_F) of this diode is comparable to that of typical fast recovery rectifiers.

MJ10015
MJ10016

50 AMPERE
NPN SILICON
POWER DARLINGTON
TRANSISTORS

400 and 500 VOLTS
250 WATTS



STYLE 1
PIN 1 BASE
2 EMITTER
CASE COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	28.28	28.27	1.110	1.100
B	19.30	21.01	0.760	0.830
C	6.35	7.61	0.250	0.300
D	1.45	1.80	0.057	0.071
E	-	3.43	-	0.135
F	25.50	25.40	1.010	1.000
G	12.87	11.18	0.507	0.440
H	5.21	5.17	0.205	0.203
J	16.84	17.15	0.663	0.675
K	11.18	12.19	0.440	0.480
L	3.84	4.00	0.151	0.157
R	24.89	24.87	0.980	0.980

(TO-3 TYPE)