

BSS50 *T-35-29*
thru
BSS52

CASE 79-04, STYLE 1
TO-39 (TO-205AD)

DARLINGTON
TRANSISTORS
 NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	BSS50	BSS51	BSS52	Unit
Collector-Emitter Voltage	V _{CEO}	45	60	80	Vdc
Collector-Emitter Voltage	V _{CER}	45	60	80	Vdc
Collector-Base Voltage	V _{CBO}	60	80	100	Vdc
Emitter-Base Voltage	V _{EBO}	5.0			Vdc
Collector Current - Continuous	I _C	1.0			Adc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	0.8	5.3		Watt mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	5	28.6		Watt mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	35	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	220	°C/W

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

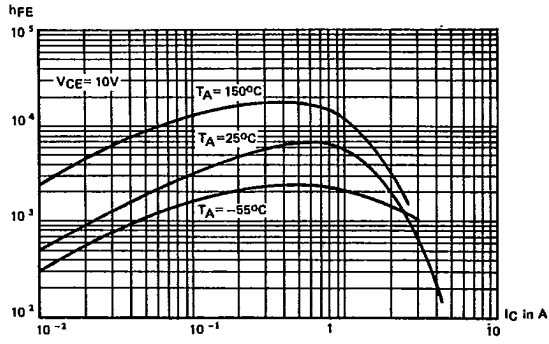
Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Cutoff Current (V _{CB} = 45 V, I _E = 0) (V _{CB} = 60 V, I _E = 0) (V _{CB} = 80 V, I _E = 0)	BSS50 BSS51 BSS52	I _{CBO}		50 50 50	nA
Emitter-Cutoff Current (V _{EB} = 4 V, I _C = 0)		I _{EBO}		50	nA
Collector-Emitter Breakdown Voltage. (I _C = 10 mA, I _B = 0)	BSS50 BSS51 BSS52	V _{(BR)CEO}	45 60 80		V
Emitter-Base Breakdown Voltage (I _B = 100 μA, I _C = 0)		V _{(BR)EBO}	5		V
ON CHARACTERISTICS					
DC Current Gain(1) (I _C = 150 mA, V _{CE} = 10 V) (I _C = 500 mA, V _{CE} = 10 V)		h _{FE}	1500 2000		
Base-Emitter Voltage(1) (I _C = 150 mA, V _{CE} = 10 V) (I _C = 500 mA, V _{CE} = 10 V)		V _{BE(on)}	1.4 1.5	1.55 1.65	V
Saturation Voltage(1) (I _C = 500 mA, I _B = 0.5 mA) (I _C = 500 mA, I _B = 0.5 mA) (I _C = 1 A, I _B = 1 mA) (I _C = 1 A, I _B = 1 mA) (I _C = 1 A, I _B = 4 mA) (I _C = 1 A, I _B = 4 mA)	BSS51 BSS51 BSS50-52 BSS50-52	V _{CE(sat)} V _{BE(sat)} V _{CE(sat)} V _{BE(sat)} V _{CE(sat)} V _{BE(sat)}		1.3 1.9 1.6 2.2 1.6 2.2	V
DYNAMIC CHARACTERISTICS					
Current Gain Bandwidth Product (I _C = 500 mA, V _{CE} = 5, f = 20 MHz)		f _T	70		MHz
Output Capacitance (V _{CB} = 10 V, I _E = 0, f = 1 MHz)		C _{ob}	11	25	pF
Turn On Time (I _C = 500 mA, I _{B1} = -I _{B2} = 0.5 mA)		t _{on}	400		ns
Turn Off Time (I _C = 500 mA, I _{B1} = -I _{B2} = 0.5 mA)		t _{off}	1500		ns

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2%, unless otherwise specified.

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FIGURE 1 — CURRENT GAIN versus COLLECTOR CURRENT



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