MOSPEC

COMPLEMENTARY SILICON HIGH-POWER TRANSISTORS

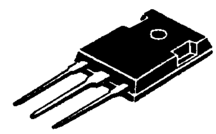
... designed for use in general purpose power amplifier and switching applications.

NPN	PNP
BD249	BD250
BD249A	BD250A
BD249B	BD250B
BD249C	BD250C

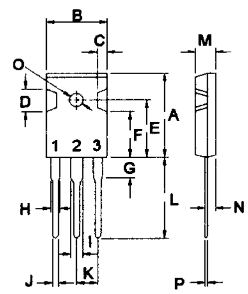
25 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
45 -100 VOLTS
125 WATTS

FEATURES:

* Collector-Emitter Sustaining Voltage -
  $V_{CEO(sus)}$= 45V(Min)- BD249,BD250
  60V(Min)- BD249A,BD250A
  80V(Min)- BD249B,BD250B
  100V(Min)- BD249C,BD250C
* DC Current Gain hFE= 10(Min)@I_C= 15A
* Current Gain-Bandwidth Product f_T=3.0 MHz (Min)@ I_C=1.0A



TO-247(3P)



PIN 1.BASE
2.COLLECTOR
3.EMITTER

DIM	MILLIMETERS	
	MIN	MAX
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	4.20	4.50
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

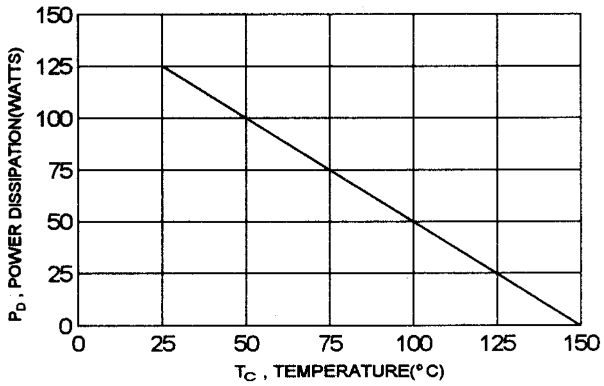
MAXIMUM RATINGS

Characteristic	Symbol	BD249 BD250	BD249A BD250A	BD249B BD250B	BD249C BD250C	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	100	V
Collector-Base Voltage	V_{CBO}	55	70	90	115	V
Emitter-Base Voltage	V_{EBO}	5.0				V
Collector Current - Continuous - Peak	I_C	25 40				A
Base Current	I_B	5				A
Total Power Dissipation@T_C = 25°C Derate above 25°C	P_D	125 1.0				W 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	Rθjc	1.0	°C/W

FIGURE -1 POWER DERATING



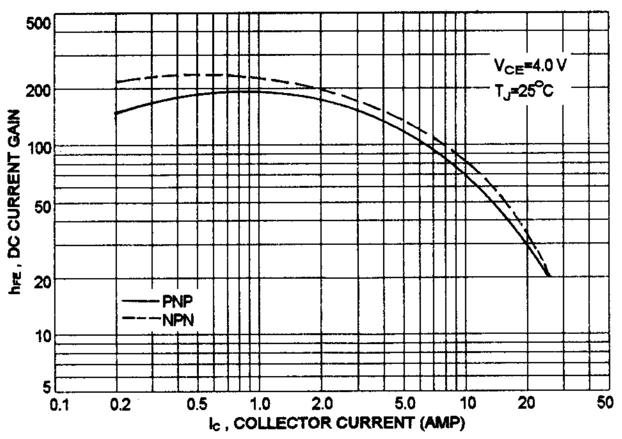
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) (I_C= 30 mA, I_B= 0)	BD249,BD250 BD249A,BD250A BD249B,BD250B BD249C,BD250C	$V_{(BR)CEO}$	45 60 80 100		V
Collector Cutoff Current (V_{CE}= 30 V, I_B= 0) (V_{CE}= 60 V, I_B= 0)	BD249/50/49A/50A BD249B/50B/49C/50C	I_{CEO}		1.0 1.0	mA
Collector Cutoff Current (V_{CE}= 45 V, V_{EB}= 0) (V_{CE}= 60 V, V_{EB}= 0) (V_{CE}= 80 V, V_{EB}= 0) (V_{CE}= 100 V, V_{EB}= 0)	BD249/50 BD249A/50A BD249B/50B BD249C/50C	I_{CES}		0.7 0.7 0.7 0.7	mA
Emitter Cutoff Current (V_{EB}= 5.0 V, I_C= 0)		I_{EBO}		1.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (V_{CE} = 4.0 V, I_C = 1.5 A) (V_{CE} = 4.0 V, I_C = 15 A) (V_{CE} = 4.0 V, I_C = 25 A)		hFE	25 10 5.0		
Collector-Emitter Saturation Voltage (I_C = 15 A, I_B = 1.5 A) (I_C = 25 A, I_B = 5.0 A)		$V_{CE(sat)}$		1.8 4.0	V
Base-Emitter On Voltage (I_C =15 A, V_{CE}= 4.0 V) (I_C =25 A,V_{CE}= 4.0 V)		$V_{BE(on)}$		2.0 4.0	V
DYNAMIC CHARACTERISTICS					
Current Gain-Bandwidth Prodct (2) (I_C=1.0 A, V_{CE}=10 V, f= 1MHz)		f_T	3.0		MHz

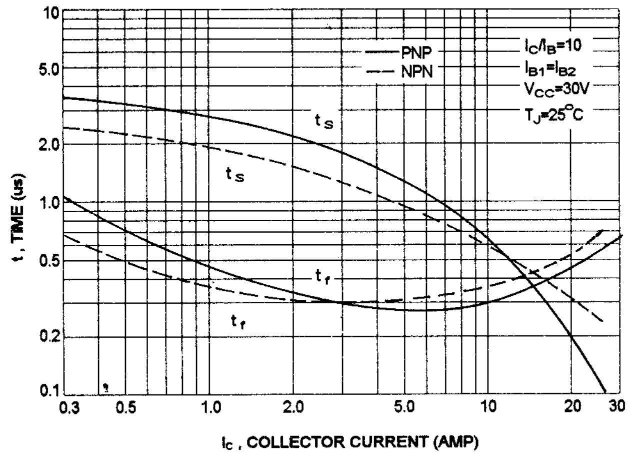
(1) Pulse Test: Pulse width = 300 μs , Duty Cycle ≦ 2.0%

(2) $f_T = |h_{fe}| \cdot f_{test}$

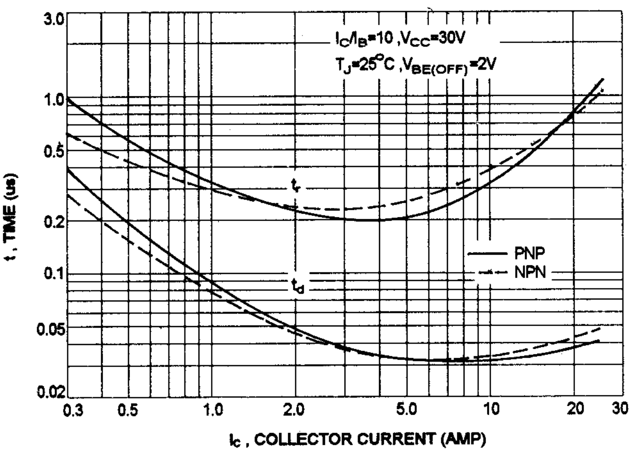
DC CURRENT GAIN



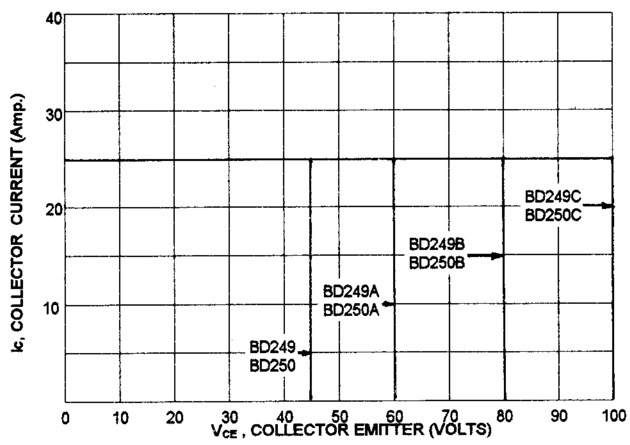
TURN-OFF TIME



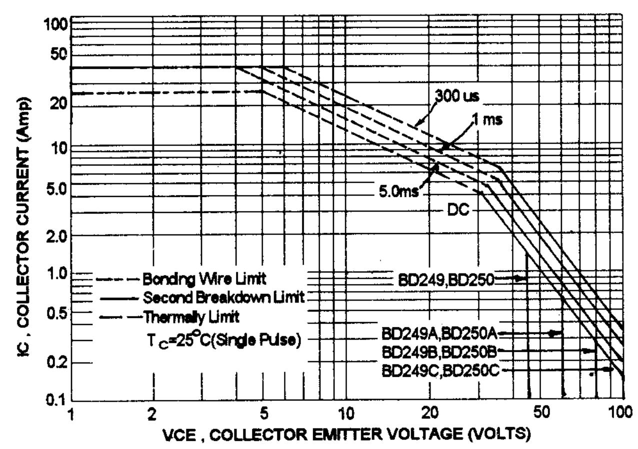
TURN-ON TIME



REVERSE BIASE SAFE OPERATING AREA



ACTIVE-REGION SAFE OPERATING AREA (SOA)



There are two limitation 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 than curves indicate.

The data of SOA curve is base 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 limita - tion will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

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