MOSPEC

PLASTIC MEDIUM-POWER
COPLEMENTARY SILICON TRANSISTORS

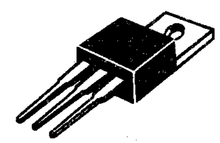
...designed for general-purpose amplifier and low speed switching applications

FEATURES:

* Collector-Emitter Sustaining Voltage-
  $V_{CEO(SUS)}$ = 60 V (Min) - TIP130,TIP135
  = 80 V (Min) - TIP131,TIP136
  = 100 V (Min) - TIP132,TIP137
* Collector-Emitter Saturation Voltage
  $V_{CE(sat)}$ = 2.0V (Max.) @ I_C = 4.0 A
* Monolithic Construction with Built-in Base-Emitter Shunt Resistor

NPN	PNP
TIP130	TIP135
TIP131	TIP136
TIP132	TIP137

8.0 AMPERE
DARLINGTON
COMPLEMENTARY SILICON
POWER TRANSISTORS
60-100 VOLTS
70 WATTS



TO-220

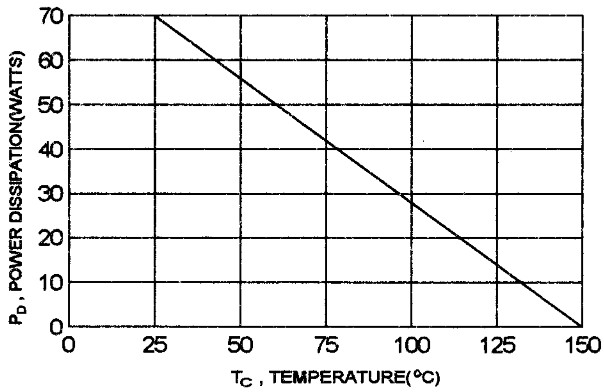
MAXIMUM RATINGS

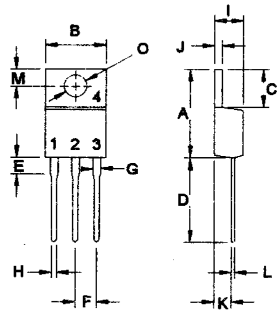
Characteristic	Symbol	TIP130 TIP135	TIP131 TIP136	TIP132 TIP137	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	100	V
COllector-Base Voltage	V_{CBO}	60	80	100	V
Emitter-Base Voltage	V_{EBO}	5.0			V
Collector Current-Continuous -Peak	I_C I_{CM}	8.0 12			A
Base Current	I_B	0.3			mA
Total Power Dissipation @T_C= 25°C Derate above 25°C	P_D	70 0.56			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	1.785	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

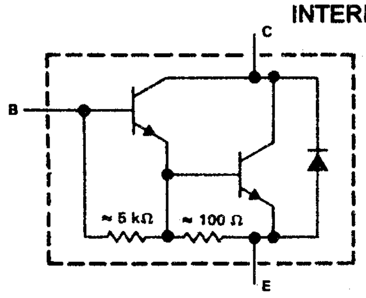
ELECTRICAL CHARACTERISTICS (T_c = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 30 mA, I_B = 0)	 TIP130,TIP135 TIP131,TIP136 TIP132,TIP137	$V_{CEO(sus)}$	 60 80 100		V
Collector Cutoff Current (V_{CE} = 30 V, I_B = 0) (V_{CE} = 40 V, I_B = 0) (V_{CE} = 50 V, I_B = 0)	 TIP130,TIP135 TIP131,TIP136 TIP132,TIP137	I_{CEO}		 0.5 0.5 0.5	mA
Collector Cutoff Current (V_{CB} = 60 V, I_E = 0) (V_{CB} = 80 V, I_E = 0) (V_{CB} = 100 V, I_E = 0)	 TIP130,TIP135 TIP131,TIP136 TIP132,TIP137	I_{CBO}		 0.2 0.2 0.2	mA
Emitter Cutoff Current (V_{EB} = 5.0 V, I_C = 0)		I_{EBO}		 5.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C = 1.0 A, V_{CE} = 4.0 V) (I_C = 4.0 A, V_{CE} = 4.0 V)		hFE	 500 1000	 15000	
Collector-Emitter Saturation Voltage (I_C = 4.0 A, I_B = 16 mA) (I_C = 6.0 A, I_B = 30 mA)		$V_{CE(sat)}$		 2.0 3.0	V
Base-Emitter On Voltage (I_C = 4.0 A, V_{CE} = 4.0 V)		$V_{BE(on)}$		 2.5	V
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 10 V, I_E = 0 , f = 0.1 MHz)		C_{ob}		 250	pF

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

INTERNAL SCHEMATIC DIAGRAM

NPN
TIP130
TIP131
TIP132



PNP
TIP135
TIP136
TIP137

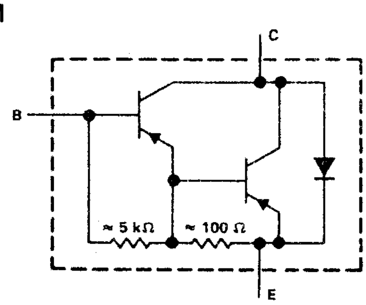


FIG-2 DC CURRENT GAIN

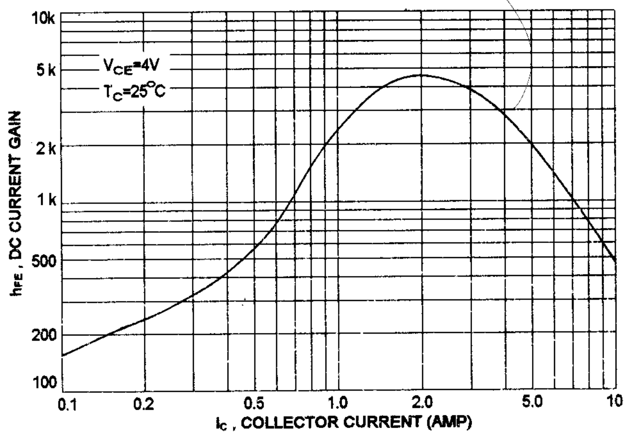


FIG-3 BAES-EMITTER VOLTAGE

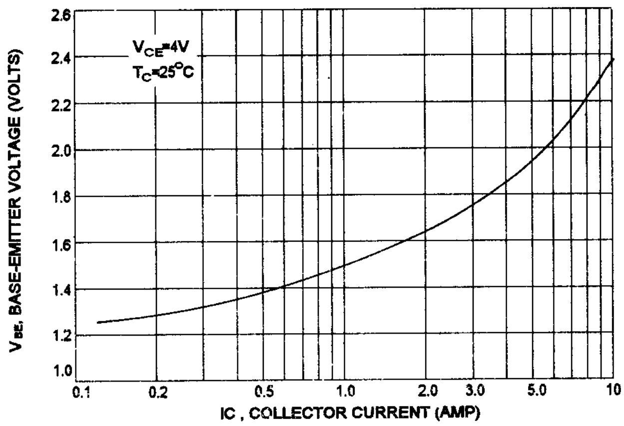


FIG-4 COLLECTOR-EMITTER SATURATION VOLTAGE

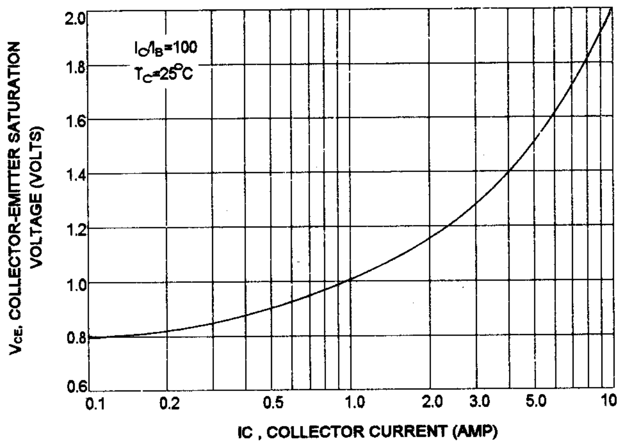


FIG-5 FORWARD VOLTAGE COMMUTATING DIODE

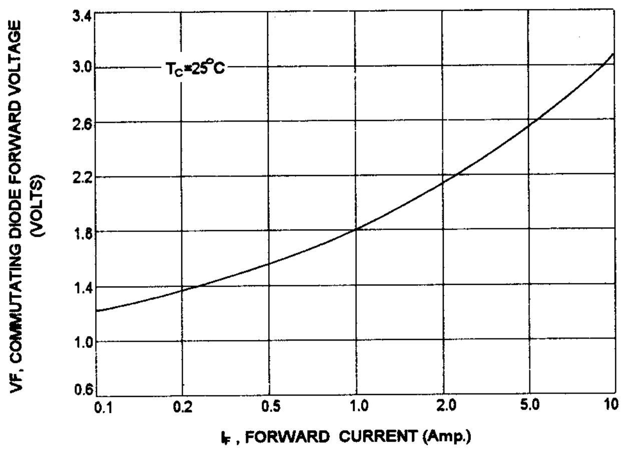
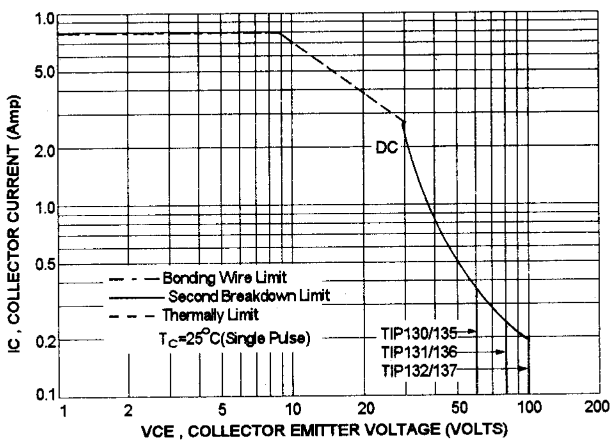


FIG-6 ACTIVE REGION SAFE OPERATING AREA



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 FIG-6 curve is base on $T_{J(PK)}$=150 °C; T_C is variable depending on power level. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$ ≤150°C,At high case temperatures,thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.