Darlington Silicon NPN Power Transistors

T-33-29

TIP110 TIP111 TIP112

TO-220 Package

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	TIP110	TIP111	TIP112	Unit
Collector-Base Voltage	V_{CBO}	60	80	100	V
Collector-Emitter Voltage	V_{CEO}	60	80	100	V
Emitter-Base Voltage	V_{EBO}	5			V
Collector Current	I_C	2			A
Peak Collector Current	I_{CM}	4			A
Base Current	I_B	50			mA
Power Dissipation (Tc=25°C)	P_C	50			W
Junction Temperature	Tj	−65~+150			°C
Storage Temperature	Tstg	−65~+150			°C

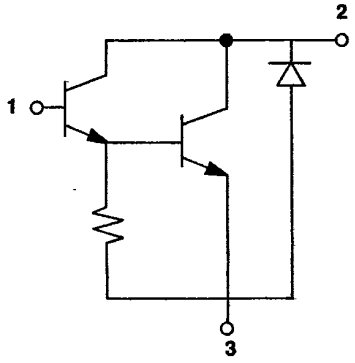
Applications:
- Power Amplifier and High Speed Switching
- Complementary pair with TIP115, TIP116, TIP117

Features:
- 50W at 25°C case temperature
- Min. h_{FE} of 500 at 4V, 2A
- 2A rated collector current
- 25mJ reverse energy rating

Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	TIP110 min.	TIP110 max.	TIP111 min.	TIP111 max.	TIP112 min.	TIP112 max.	Unit
Collector-Emitter Voltage	V_{CEO}	I_C=30mA, I_B=0	60		80		100		V
Collector Cutoff Current	I_{CEO}	V_{CE}=30V, I_B=0		2					mA
		V_{CE}=40V, I_B=0				2			
		V_{CE}=60V, I_B=0						2	
Collector-Base Current	I_{CBO}	V_{CB}=60V, I_E=0		1					mA
		V_{CB}=80V, I_E=0				1			
		V_{CB}=100V, I_E=0						1	
Emitter-Base Current	I_{EBO}	V_{EB}=5V, I_C=0		2		2		2	mA
DC Current Gain	h_{FE}	V_{CE}=4V, I_C=1A	1000		1000		1000		
		V_{CE}=4V, I_C=2A	500		500		500		
Base-Emitter Voltage	V_{BE}	V_{CE}=4V, I_C=2A		2.8		2.8		2.8	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2A, I_B=8mA		2.5		2.5		2.5	V
Turn-on Time	t_{on}	I_C=2A, I_{B1}=8mA, $-I_{B2}$=8mA	0.4 (typ.)						
Turn-off Time	t_{off}	$-V_{BE(off)}$=5V, R_L=15Ω	4 (typ.)						μs

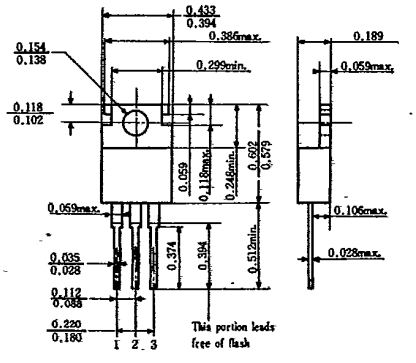
The device specifications are subject to change without prior notice.



1: Base
2: Collector
3: Emitter

THE COLLECTOR IS IN ELECTRICAL CONTACT WITH THE MOUNTING TAB

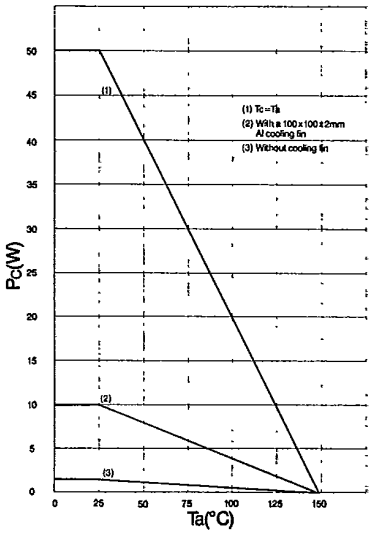
Unit: inch



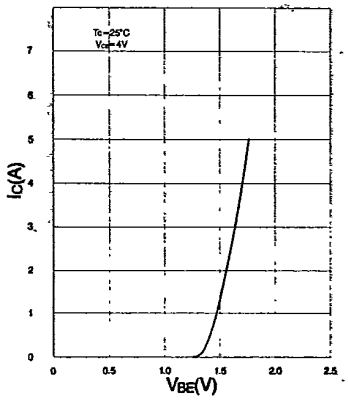
TIP110 TIP111 TIP112

Typical Characteristics

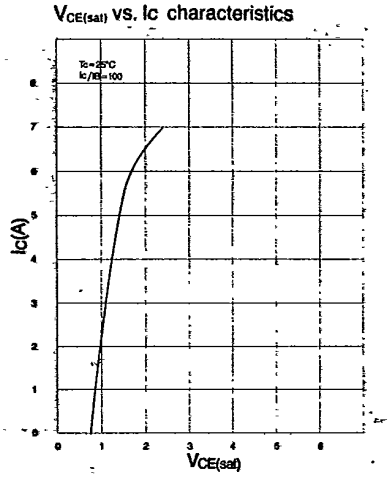
Pc vs. Ta characteristics



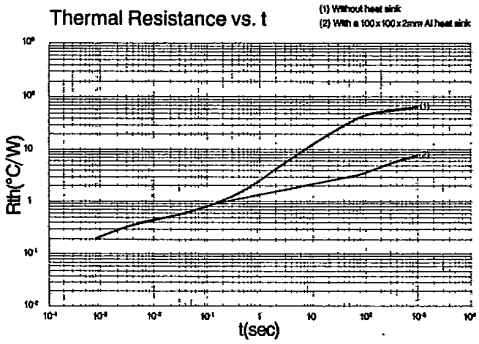
V_{BE} vs. Ic characteristics



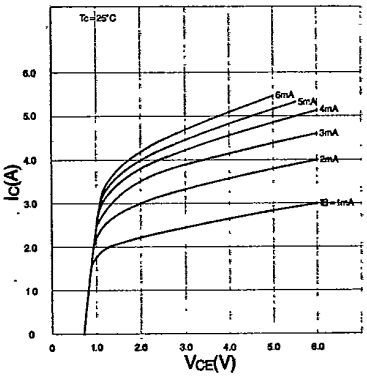
$V_{CE(sat)}$ vs. Ic characteristics



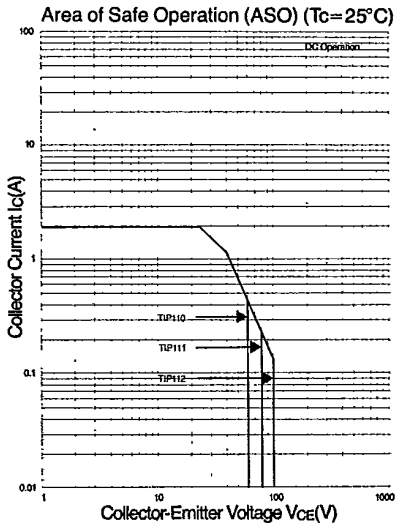
Thermal Resistance vs. t



V_{CE} vs. Ic characteristics



Area of Safe Operation (ASO) (Tc=25°C)



h_{FE} vs Ic characteristics