Ordering number:EN1058D

PNP/NPN Epitaxial Planar Silicon Darlington Transistors

2SA1258/2SC3144

60V/3A for High-Speed Drivers Applications

Features

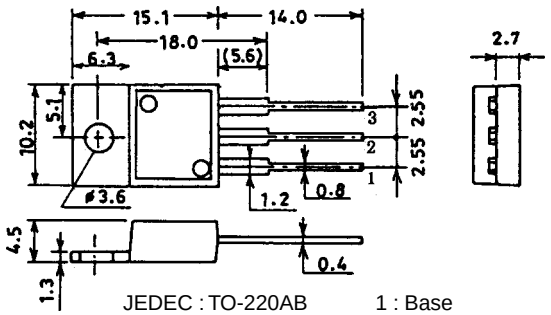
- High f_T.
- High switching speed.
- Wide ASO.

Package Dimensions

unit:mm

2010C

[2SA1258/2SC3144]



JEDEC : TO-220AB
EIAJ : SC-46

1 : Base
2 : Collector
3 : Emitter

( ) : 2SA1258

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)70	V
Collector-to-Emitter Voltage	V_{CEO}		(–)60	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)5	A
Collector Dissipation	P_C		1.75	W
		Tc=25˚C	20	W
Junction Temperature	Tj		125	˚C
Storage Temperature	Tstg		–55 to +125	˚C

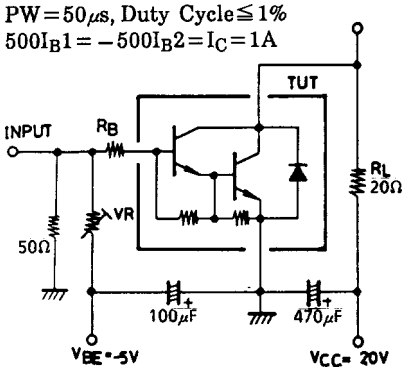
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)40V, I_E=0			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)5V, I_C=0			(–)3	mA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)1.5A	2000	5000		
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1.5A		200		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1.5A, I_B=(–)3mA		(–1.0) 0.9	(–)1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1.5A, I_B=(–)3mA			(–)2.0	V
Collector-to-Base Saturation Voltage	$V_{(BR)CBO}$	I_C=(–)5mA, I_E=0	(–)70			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)50mA, R_{BE}=∞	(–)60			V
Rise Time	t_{on}	See specified Test Circuit		0.3		µs
Storage Time	t_{stg}	See specified Test Circuit		(1.3) 1.2		µs
Fall Time	t_f	See specified Test Circuit		0.2		µs

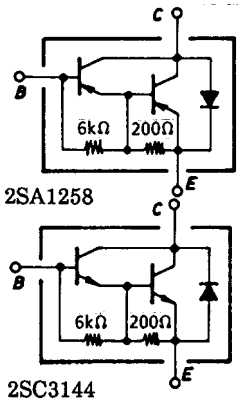
Specified Test Circuit (for PNP, the polarity is reversed)

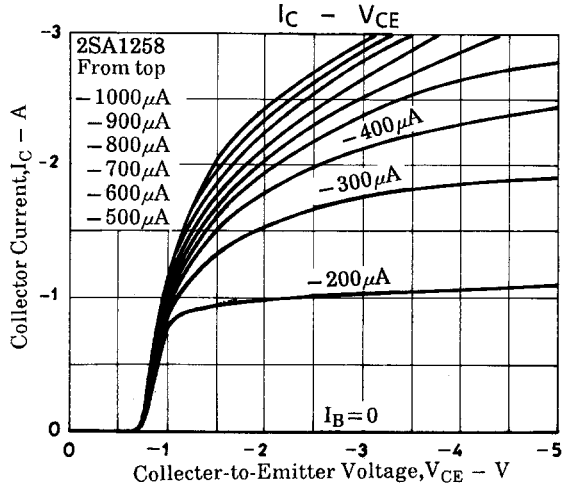
$PW = 50\mu s$, Duty Cycle ≦ 1%

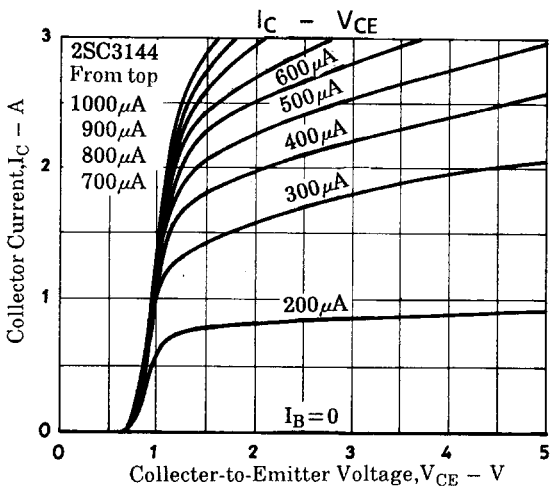
$500I_{B}1 = -500I_{B}2 = I_C = 1A$

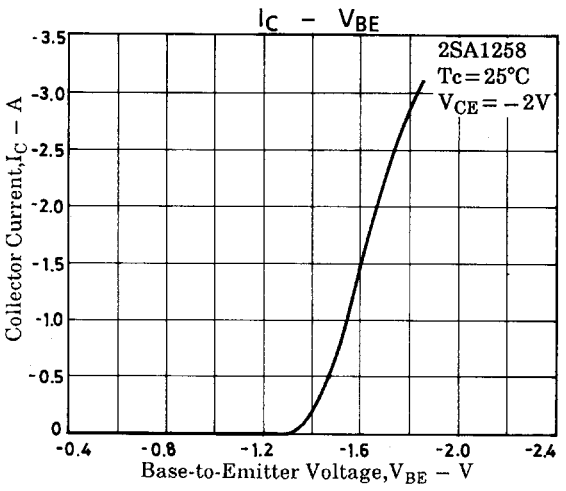


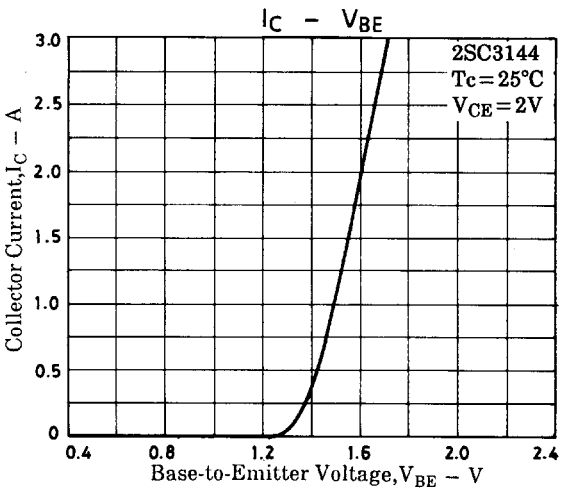
Electrical Connection

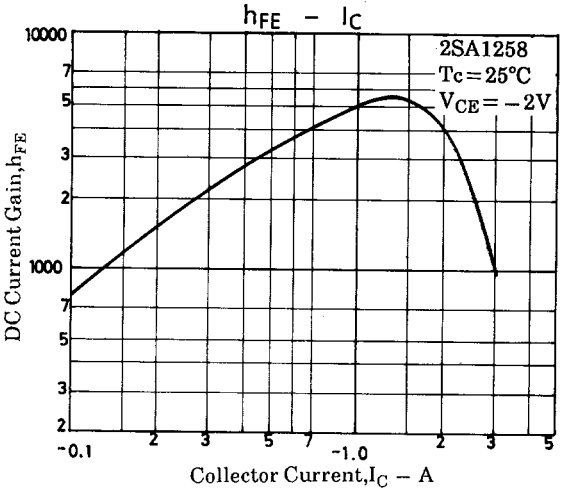


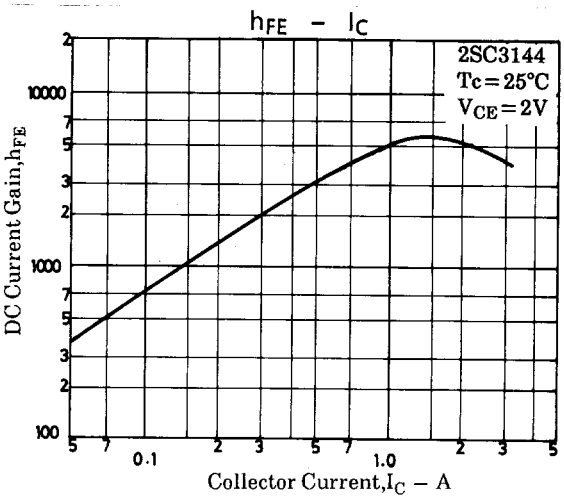


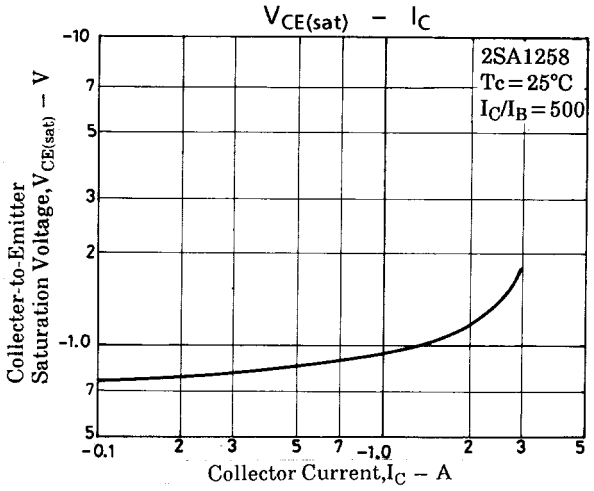


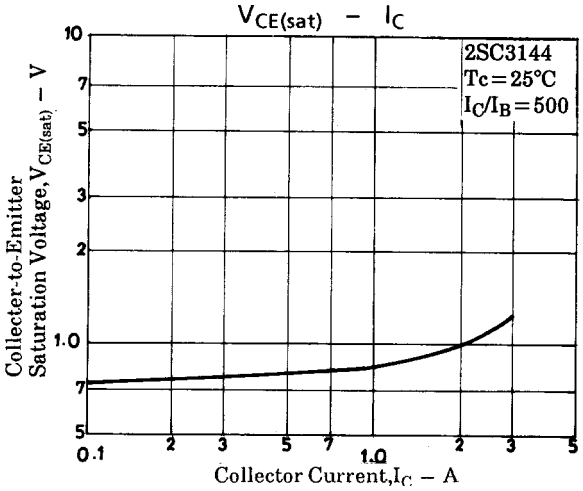


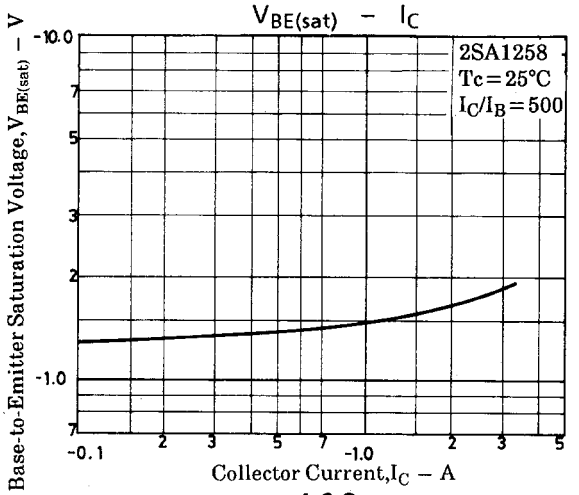


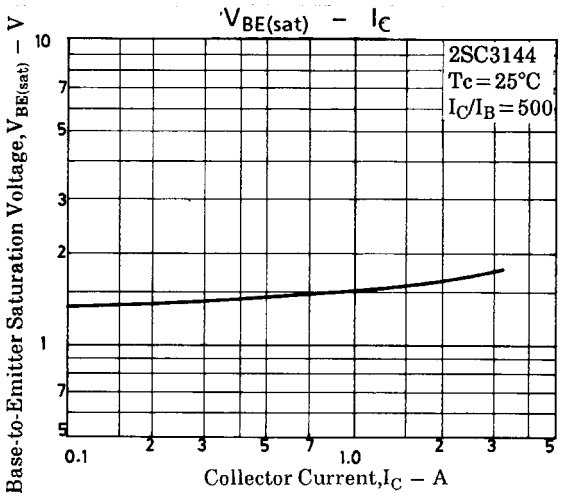


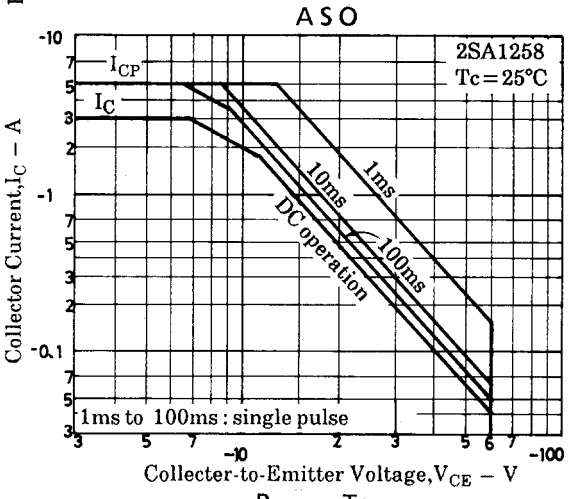


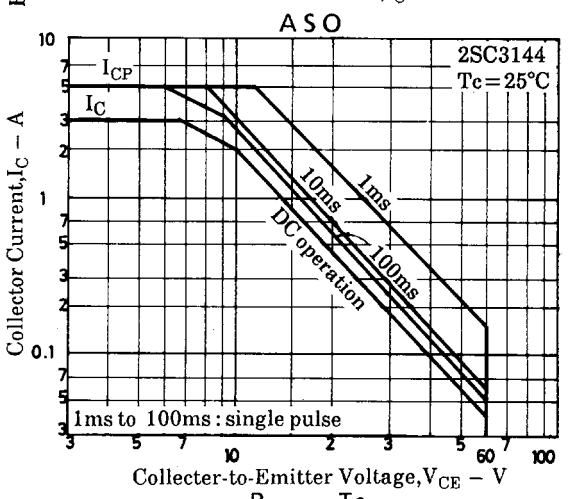

$V_{CE(sat)}$ – I_C
2SA1258
Tc=25°C
I_C/I_B=500
Collecter-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – V
Collector Current, I_C – A

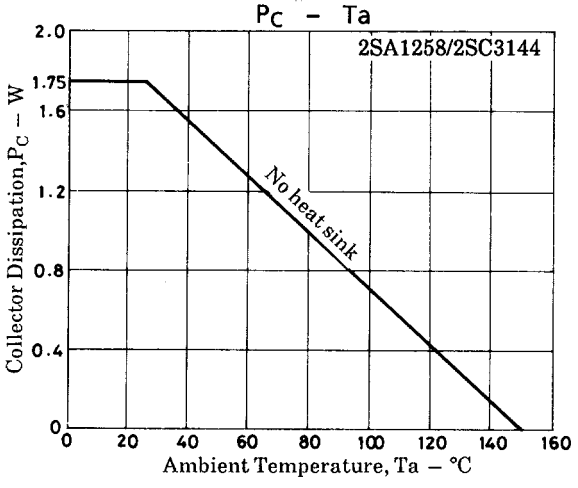

$V_{CE(sat)}$ – I_C
2SC3144
Tc=25°C
I_C/I_B=500
Collecter-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – V
Collector Current, I_C – A

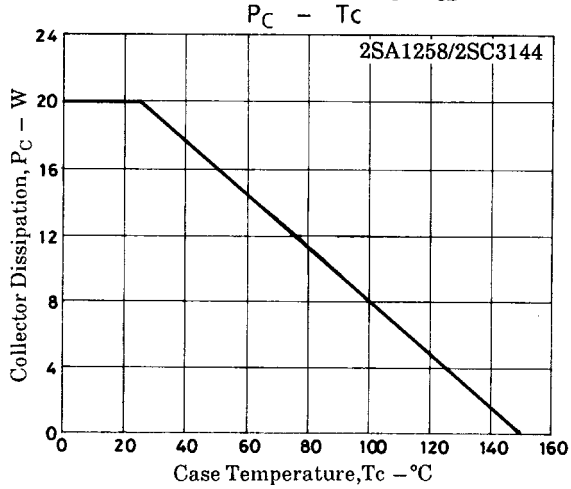

$V_{BE(sat)}$ – I_C
2SA1258
Tc=25°C
I_C/I_B=500
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A


$V_{BE(sat)}$ – I_C
2SC3144
Tc=25°C
I_C/I_B=500
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A


ASO
2SA1258
Tc=25°C
I_{CP}
I_C
1ms
10ms
100ms
DC operation
1ms to 100ms : single pulse
Collector Current, I_C – A
Collecter-to-Emitter Voltage, V_{CE} – V


ASO
2SC3144
Tc=25°C
I_{CP}
I_C
1ms
10ms
100ms
DC operation
1ms to 100ms : single pulse
Collector Current, I_C – A
Collecter-to-Emitter Voltage, V_{CE} – V


P_C – Ta
2SA1258/2SC3144
No heat sink
Collector Dissipation, P_C – W
Ambient Temperature, Ta – °C


P_C – Tc
2SA1258/2SC3144
Collector Dissipation, P_C – W
Case Temperature, Tc – °C