Ordering number:ENN1059D

PNP/NPN Epitaxial Planar Silicon Darlington Transistors

2SA1259/2SC3145

60V/5A for High-Speed Drivers Applications

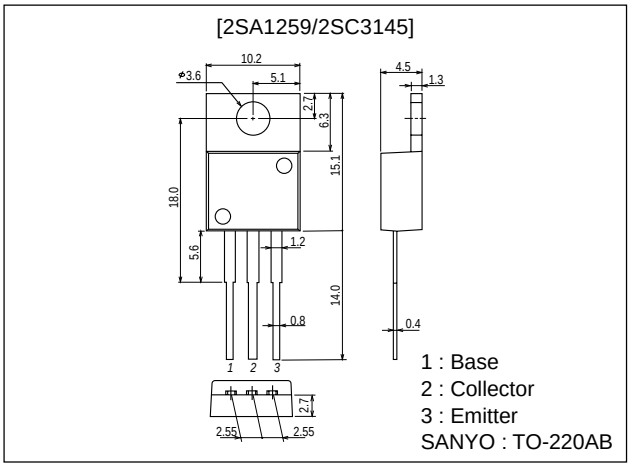
Features

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

Package Dimensions

unit:mm

2010C



( ) : 2SA1259

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		(–)5	A
Collector Current Pulse	I_{CP}		(–)8	A
Collector Dissipation	P_C		1.75	W
		Tc=25˚C	30	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚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=(–)2.5A	2000	5000		
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)2.5A		200		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)2.5A, I_B=(–)5mA		(–1.0) 0.9	(–)1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)2.5A, I_B=(–)5mA			(–)2.0	V

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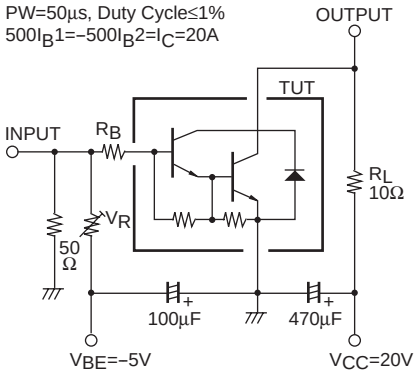
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

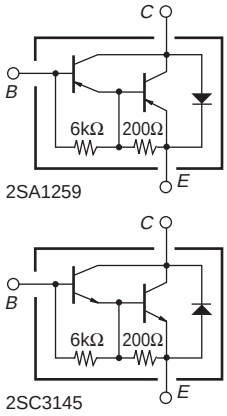
Continued from preceding page.

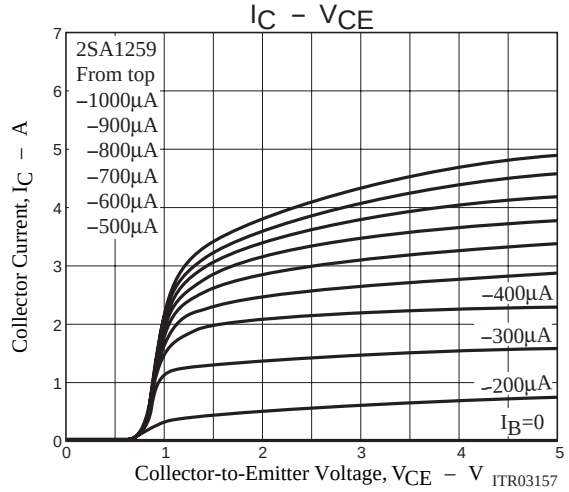
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)5mA, I_E=0	(–)70			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)50mA, R_{BE}=∞	(–)60			V
Rise Time	t_{on}	See specified Test Circuit		0.3		μs
Storage Time	t_{stg}	See specified Test Circuit		(1.3) 1.2		μs
Fall Time	t_f	See specified Test Circuit		0.2		μs

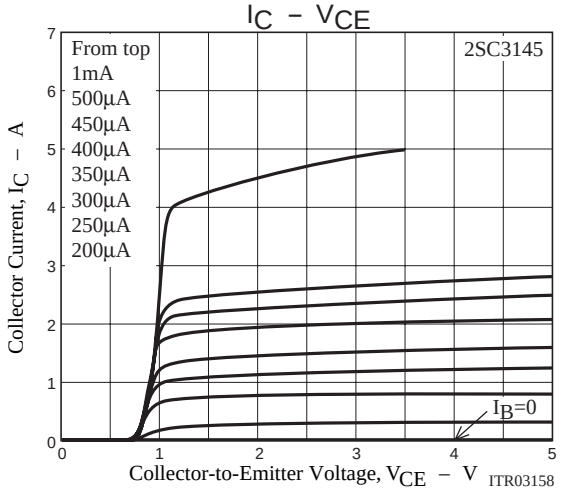
Specified Test Circuit (for PNP, the polarity is reversed)

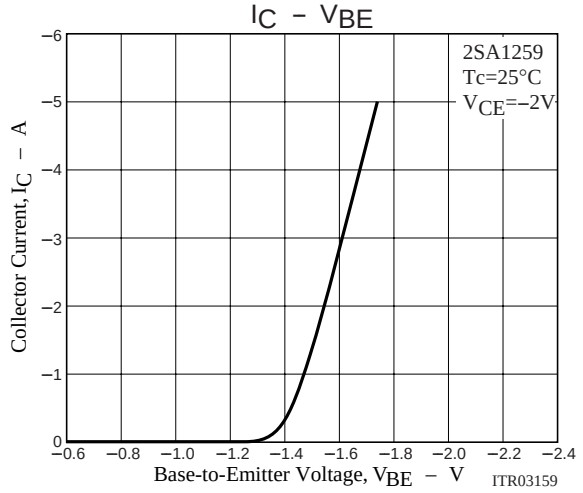


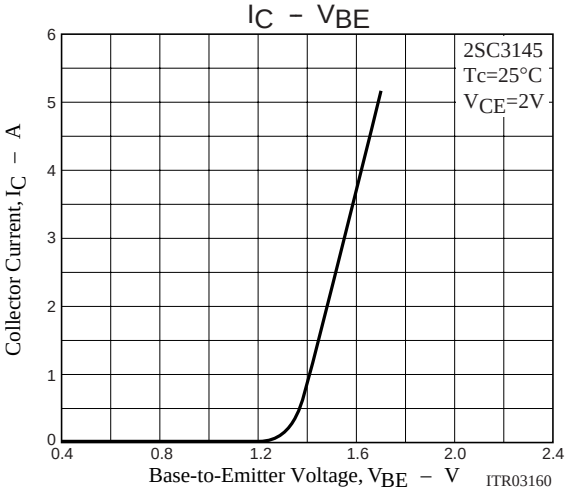
Electrical Connection

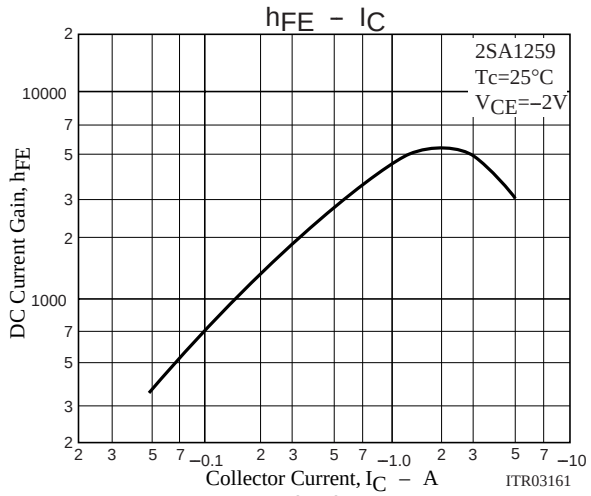


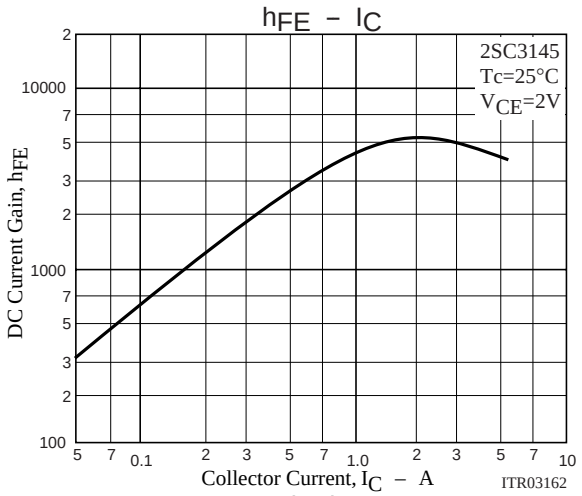


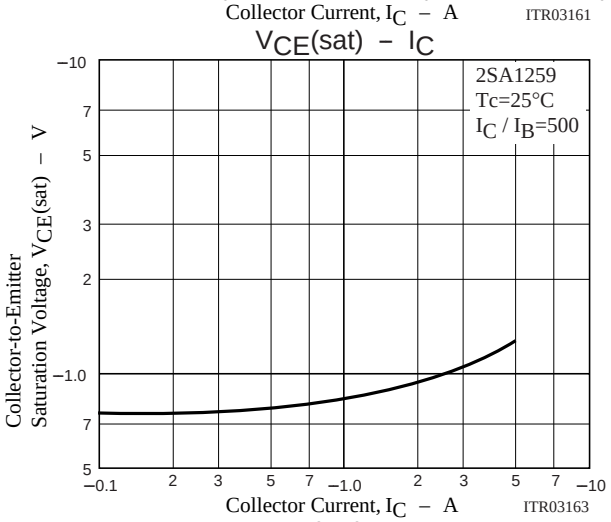


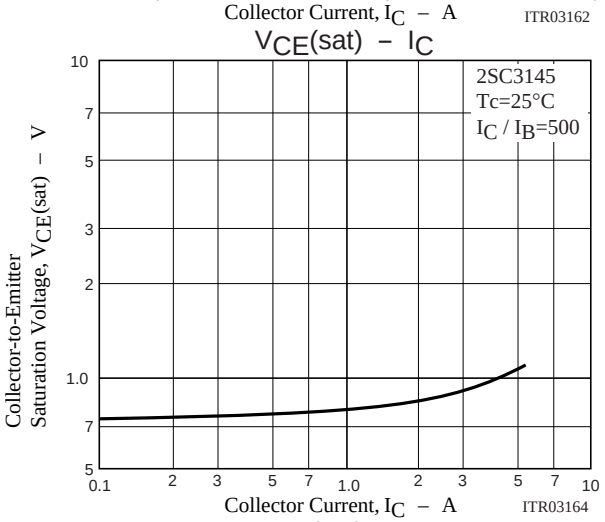


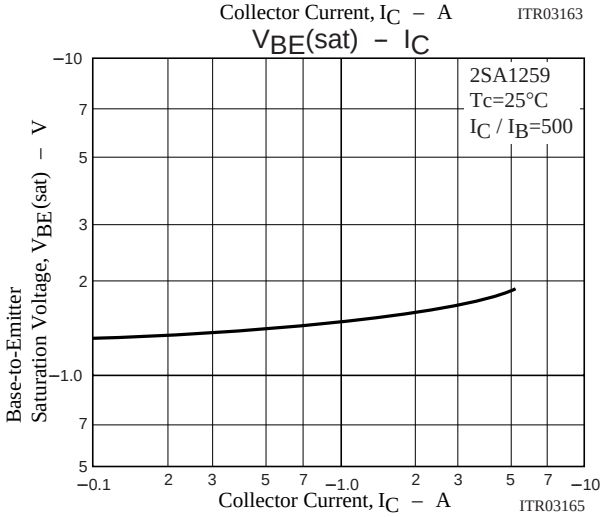


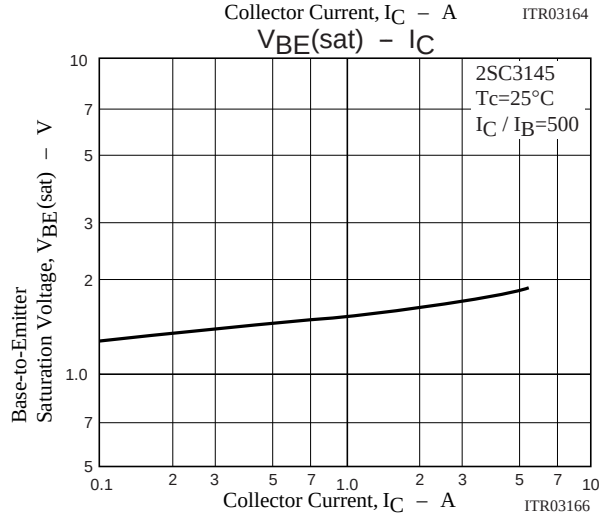

hFE – IC
2SA1259
Tc=25°C
VCE=–2V
DC Current Gain, hFE
Collector Current, IC – A
ITR03161

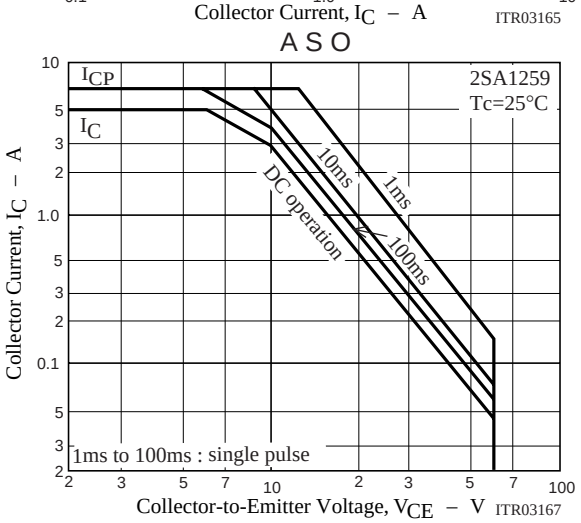

hFE – IC
2SC3145
Tc=25°C
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
ITR03162

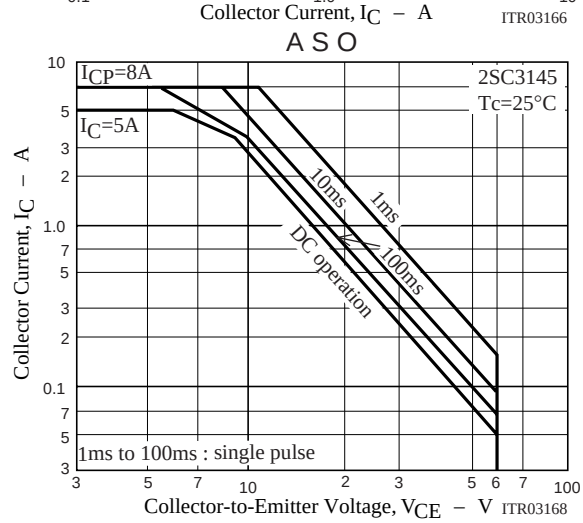

VCE(sat) – IC
2SA1259
Tc=25°C
IC / IB=500
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03163


VCE(sat) – IC
2SC3145
Tc=25°C
IC / IB=500
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03164


VBE(sat) – IC
2SA1259
Tc=25°C
IC / IB=500
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR03165


VBE(sat) – IC
2SC3145
Tc=25°C
IC / IB=500
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR03166


A S O
2SA1259
Tc=25°C
ICP
IC
10ms
1ms
DC operation
100ms
1ms to 100ms : single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03167


A S O
2SC3145
Tc=25°C
ICP=8A
IC=5A
10ms
1ms
DC operation
100ms
1ms to 100ms : single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03168