Ordering number:ENN1201D

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1291/2SC3255

60V/10A High-Speed Switching Applications

Applications

- Various inductance lamp drivers for electrical equipment.
- Inverters, converters (strobo, flash, fluorescent lamp lighting circuit).
- Power amp (high power car stereo, motor controller).
- High-speed switching (switching regulator, driver).

Features

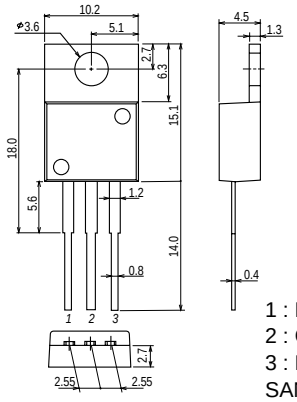
- Low saturation voltage.
- Excellent current dependence of h_{FE}.
- Short switching time.

Package Dimensions

unit:mm

2010C

[2SA1291/2SC3255]



1 : Base
2 : Collector
3 : Emitter
SANYO : TO-220AB

( ) : 2SA1291

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)80	V
Collector-to-Emitter Voltage	V_{CEO}		(–)60	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)10	A
Collector Current (Pulse)	I_{CP}		(–)12	A
Collector Dissipation	P_C	Tc=25˚C	40	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}=(–)4V, I_C=0			(–)0.1	mA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)1A	70*		280*	
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1A		100		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)5A, I_B=(–)0.25A			(–)0.4	V

* : The 2SA1291/2SC3255 are classified by 1A h_{FE} as follows :

Continued on next page.

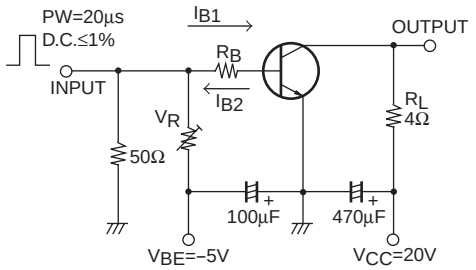
Rank	Q	R	S
h_{FE}	70 to 140	100 to 200	140 to 280

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

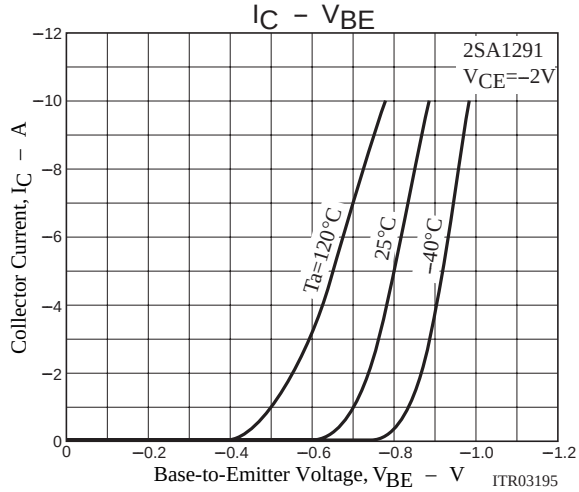
Continued preceding page.

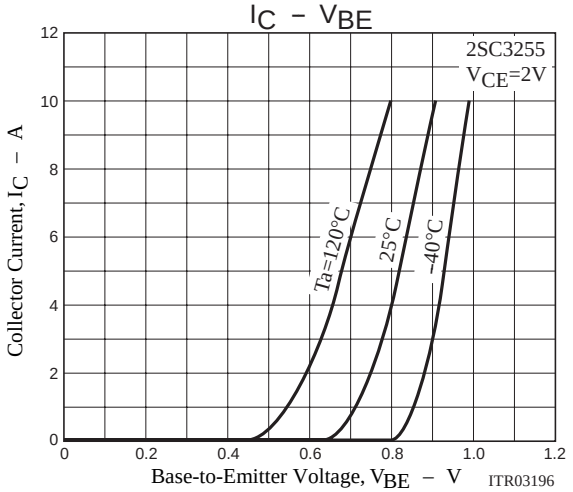
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)60			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA, I_C=0	(–)5			V
Turn-ON Time	t_{on}	See specified Test Circuit		0.1		μs
Storage Time	t_{stg}	See specified Test Circuit		0.5		μs
Fall Time	t_f	See specified Test Circuit		0.1		μs

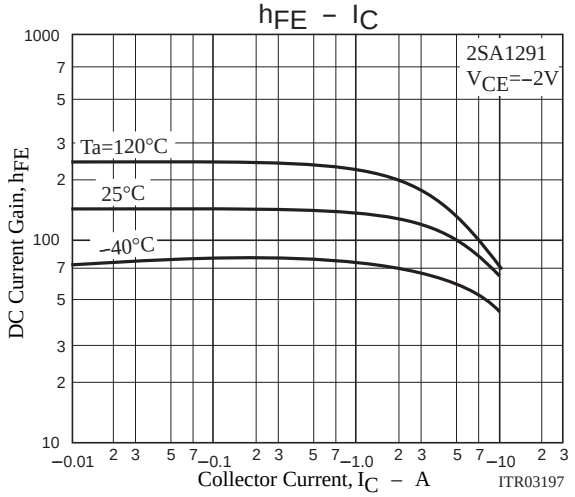
Switching Time Test Circuit

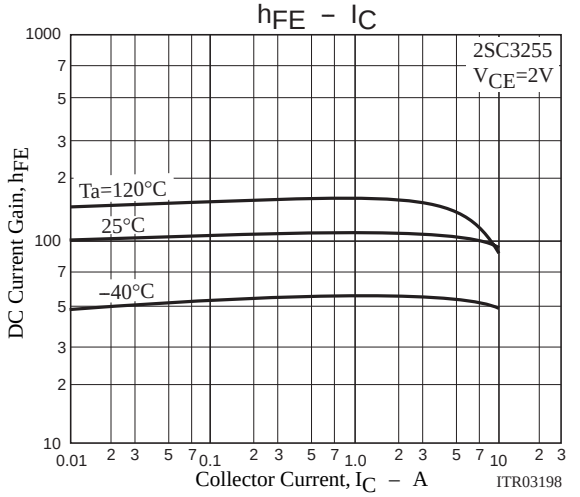


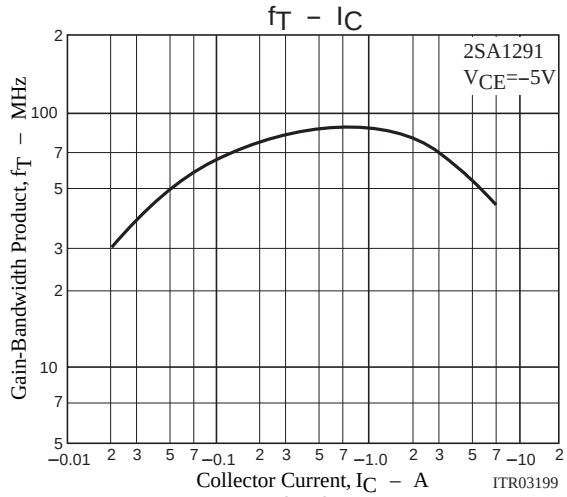
$20I_{B1}=-20I_{B2}=I_C=5A$
(For PNP, the polarity is reversed.)

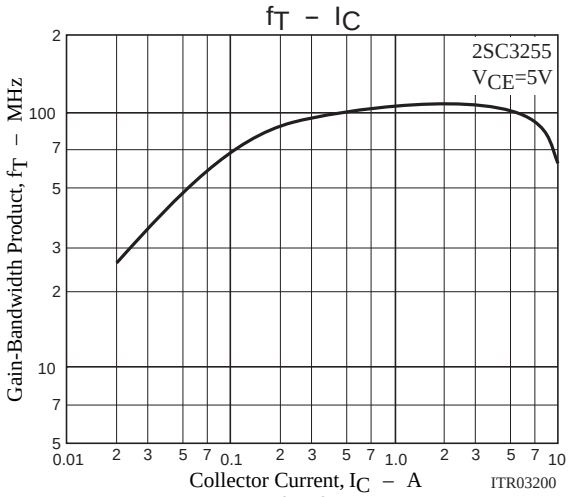


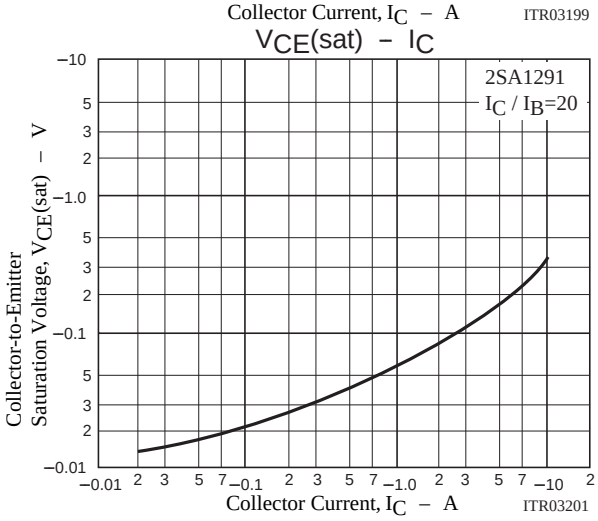


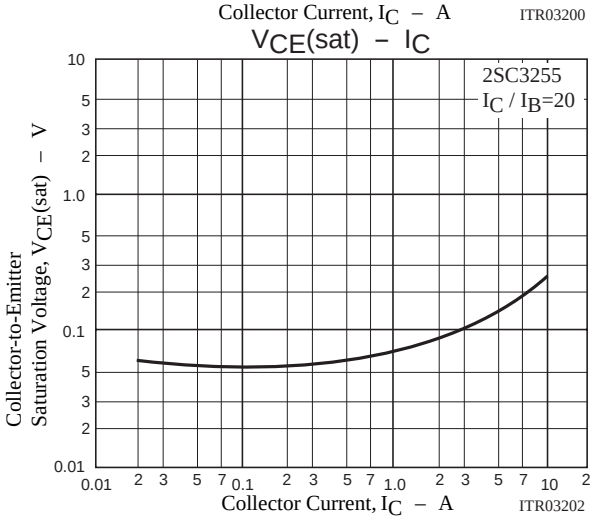


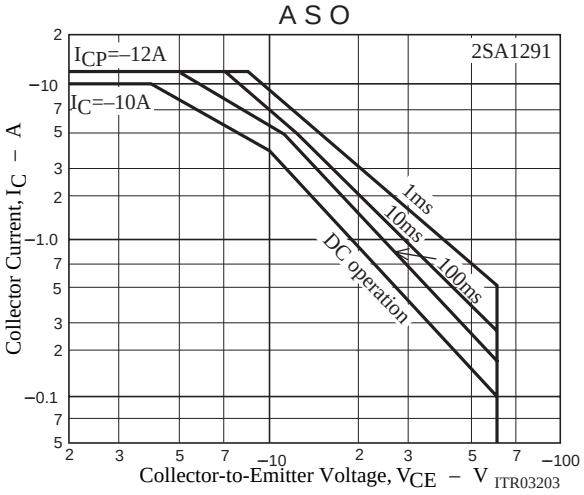


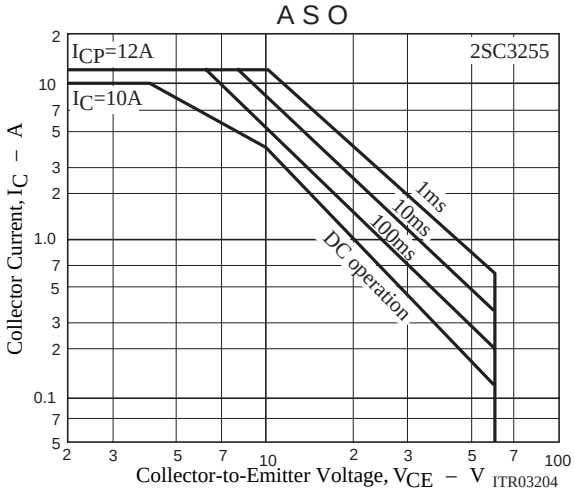

fT – IC
2SA1291
VCE=–5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR03199

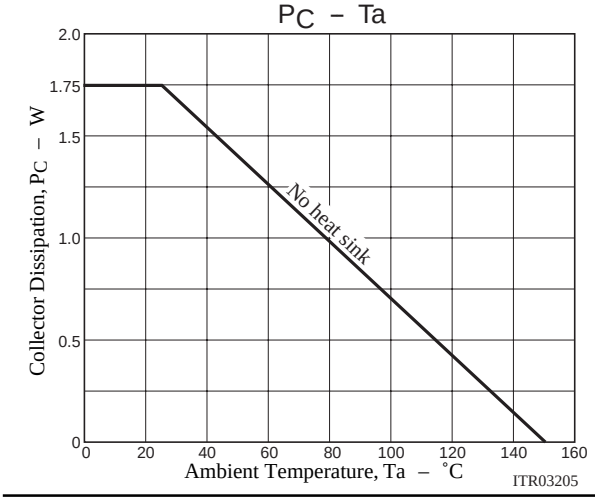

fT – IC
2SC3255
VCE=5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR03200

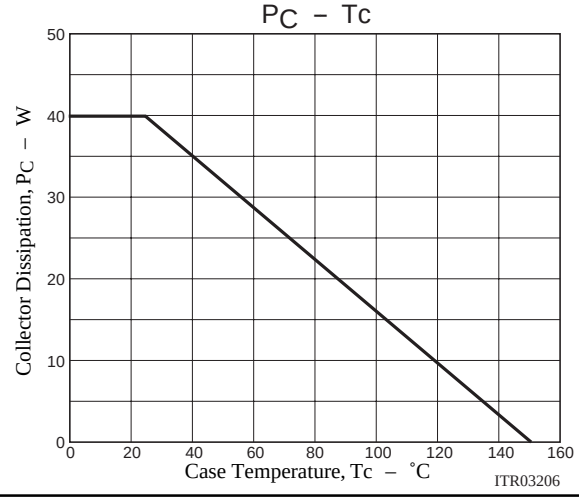

VCE(sat) – IC
2SA1291
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03201


VCE(sat) – IC
2SC3255
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03202


ASO
ICP=–12A
IC=–10A
2SA1291
1ms
10ms
100ms
DC operation
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03203


ASO
ICP=12A
IC=10A
2SC3255
1ms
10ms
100ms
DC operation
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03204


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – ˚C
ITR03205


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – ˚C
ITR03206