Ordering number:ENN1057C

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1257/2SC3143

High-Voltage Switching, AF Power Amp, 100W Output Predriver Applications

Features

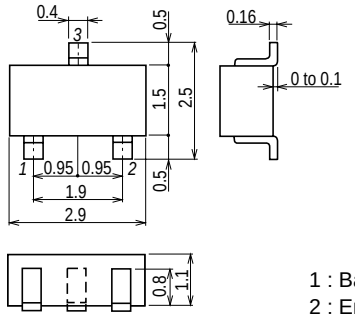
- Very small-sized package permitting the 2SA1257/ 2SC3143-applied sets to be made small and slim.
- High breakdown voltage (V_{CEO}≥160V).
- Small output capacitance.

Package Dimensions

unit:mm

2018B

[2SA1257/2SC3143]



1 : Base
2 : Emitter
3 : Collector
SANYO : CP

( ) : 2SA1257

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)80	mA
Collector Current Pulse	I_{CP}		(–)150	mA
Collector Dissipation	P_C		200	mW
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}=(–)120V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)5V, I_C=(–)10mA	60*		270*	

* : The 2SA1257/2SC3143 are classified by 10mA h_{FE} as follows :

Continued on next page.

Marking 2SA1257 : G, 2SC3143 : K, h_{FE} rank : 3, 4, 5

Rank	G3	G4	G5
h_{FE}	60 to 120	90 to 180	135 to 270

2SA1257

Rank	K3	K4	K5
h_{FE}	60 to 120	90 to 180	135 to 270

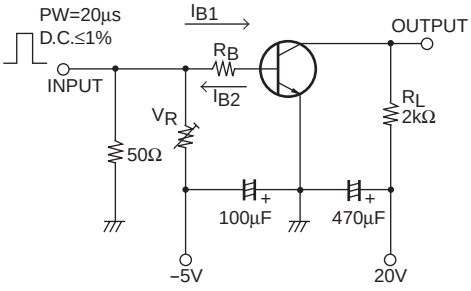
2SC3143

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

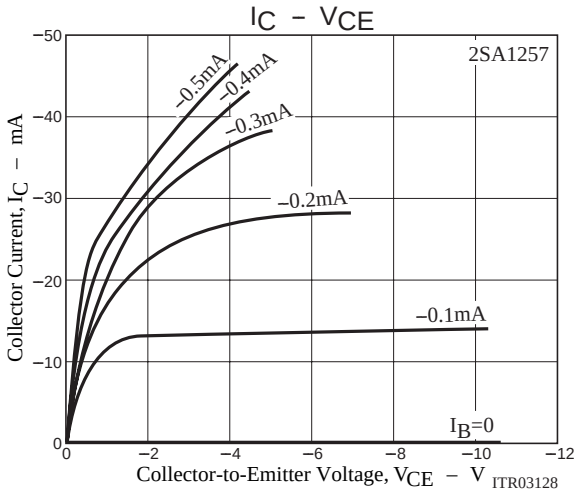
Continued from preceding page.

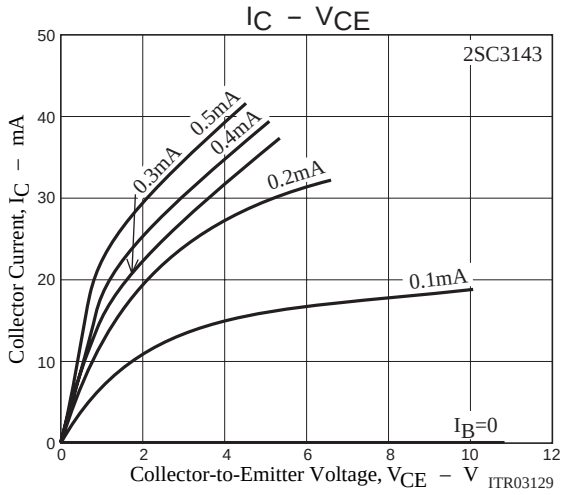
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)10mA		(130) 150		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(2.4) 2.0	(3.2) 2.8	pF
Base-to-Emitter Voltage	V_{BE}	V_{CE}=(–)5V, I_C=(–)10mA			(–)1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)30mA, I_B=(–)3mA			(–)0.7	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)5			V
Turn-ON Time	t_{on}	See specified Test Circuit		(0.15) 0.18		μs
Storage Time	t_{stg}	See specified Test Circuit		(0.95) 1.00		μs
Fall Time	t_f	See specified Test Circuit		(0.15) 0.20		μs

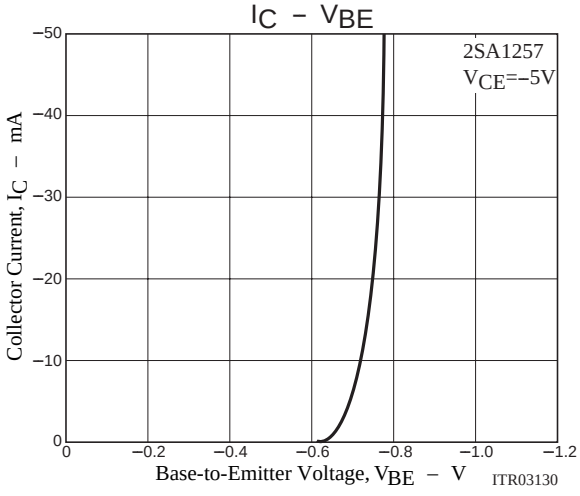
Switching Time Test Circuit

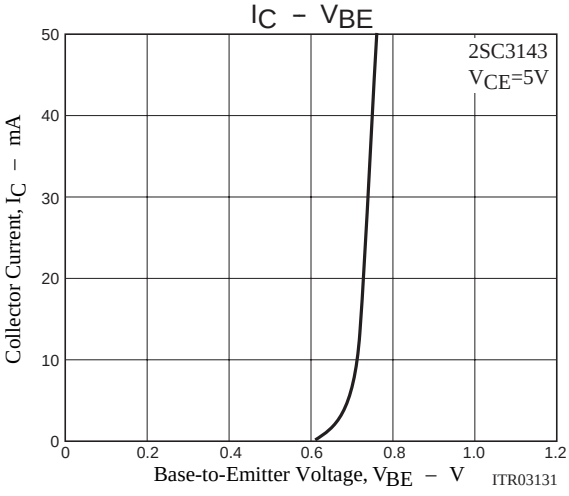


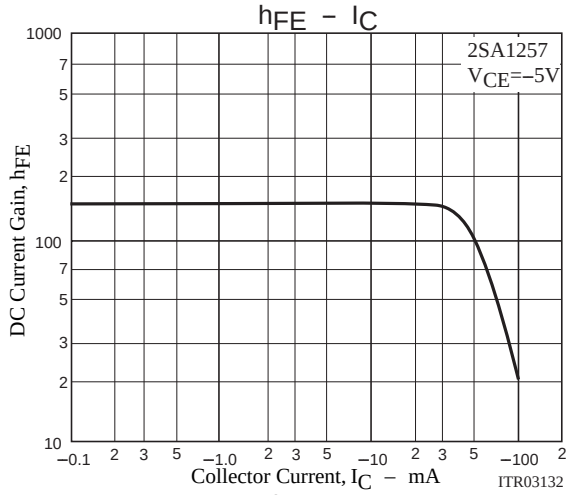
$10I_{B1}=-10I_{B2}=I_C=10mA$
(For PNP, the polarity is reversed.)

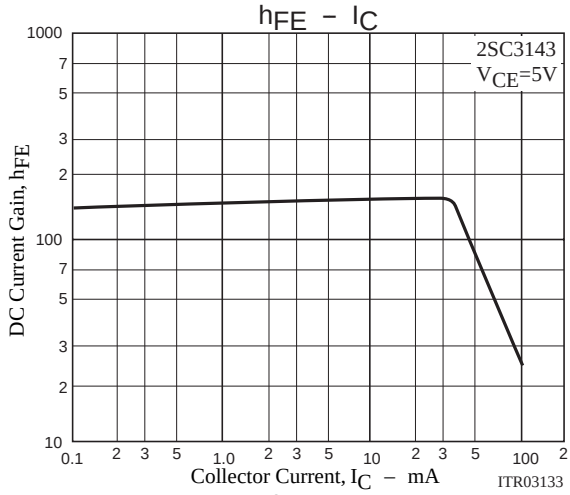


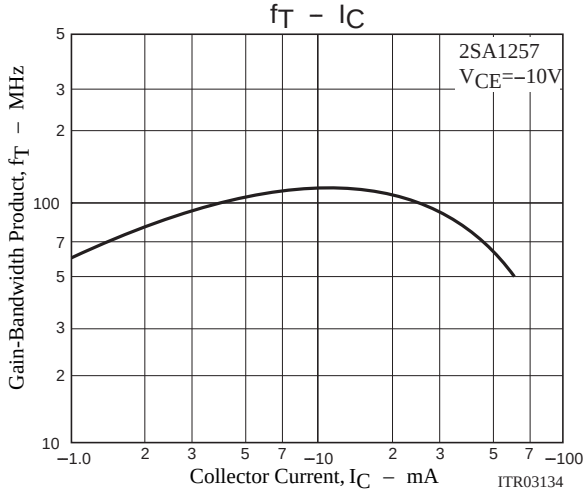


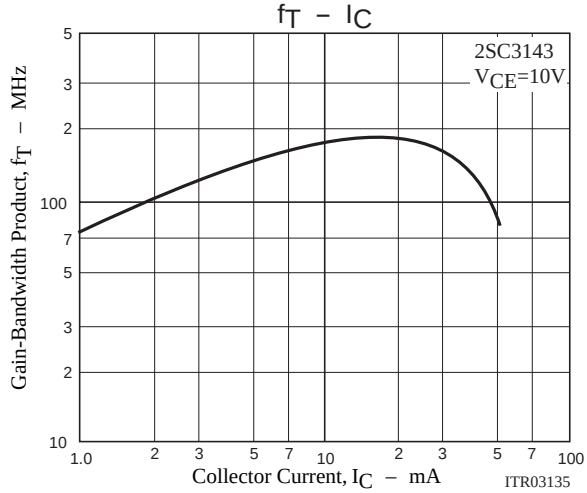


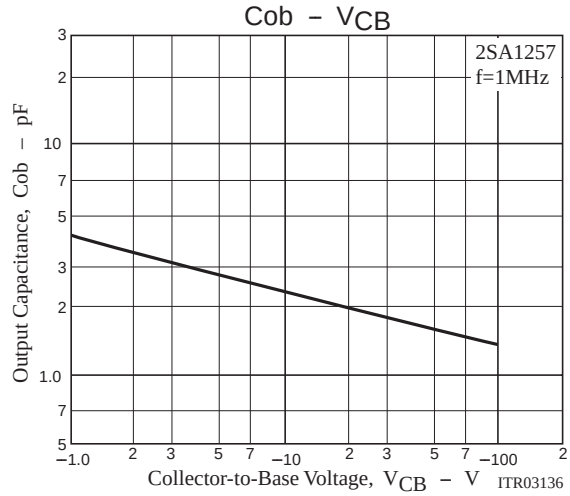


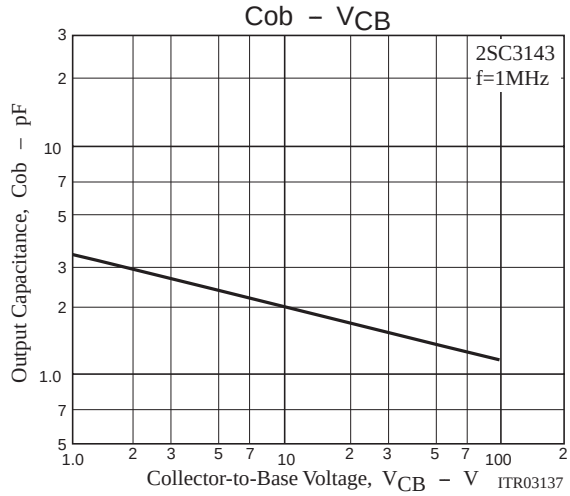

hFE – IC
2SA1257
VCE=–5V
DC Current Gain, hFE
Collector Current, IC – mA
ITR03132

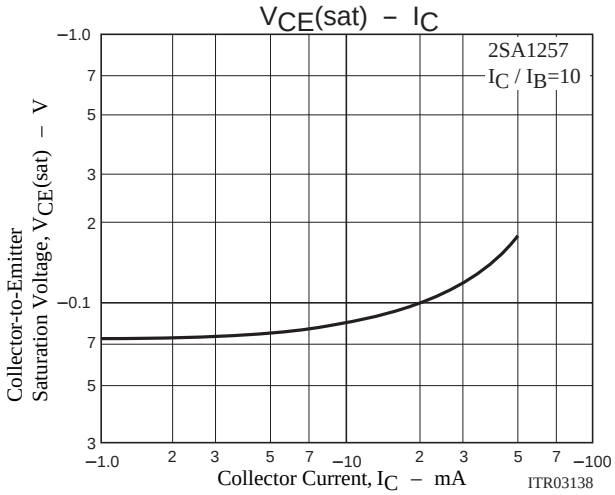

hFE – IC
2SC3143
VCE=5V
DC Current Gain, hFE
Collector Current, IC – mA
ITR03133

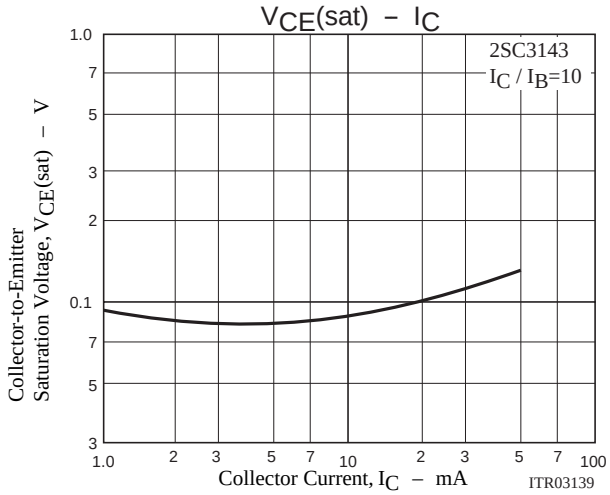

fT – IC
2SA1257
VCE=–10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03134


fT – IC
2SC3143
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03135


Cob – VCB
2SA1257
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03136


Cob – VCB
2SC3143
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03137


VCE(sat) – IC
2SA1257
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03138


VCE(sat) – IC
2SC3143
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03139