Ordering number : ENA0439

SANYO Semiconductors
DATA SHEET

NPN Epitaxial Planar Silicon Transistor

2SC3807C — 25V / 2A High-hFE, Low Frequency General-Purpose Amplifier Applications

Applications

- Low-frequency general-purpose amplifiers, drivers.

Features

- Large current capacity (I_C=2A).
- Adoption of MBIT process.
- High DC current gain (h_{FE}=1000 to 2000).
- Low collector-to-emitter saturation voltage (V_{CE}(sat)≤0.5V).
- High V_{EBO} (V_{EBO}≥17V).

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		30	V
Collector-to-Emitter Voltage	V_{CEO}		25	V
Emitter-to-Base Voltage	V_{EBO}		17	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		4	A
Collector Dissipation	P_C		1.2	W
		Tc=25°C	15	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

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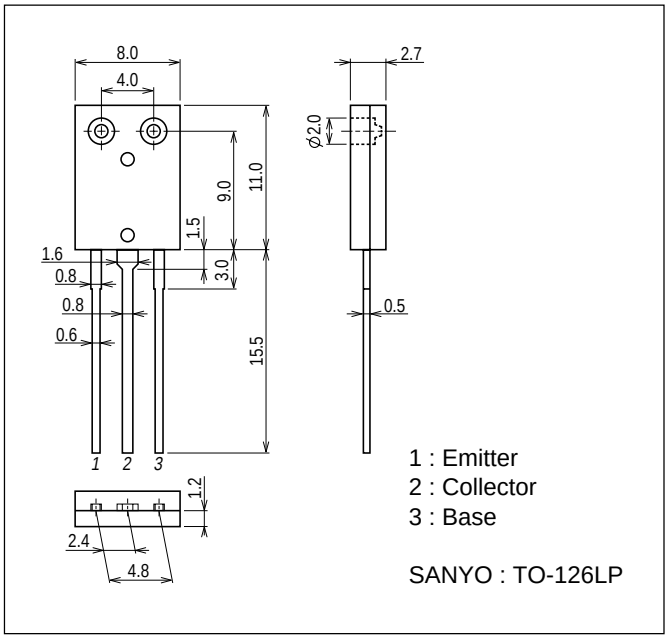
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=20V, I_E=0A			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=10V, I_C=0A			0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=500mA	1000		2000	
	$h_{FE}2$	V_{CE}=5V, I_C=1A	600			
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.1A		260		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		24		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=1A, I_B=20mA		0.15	0.5	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=1A, I_B=20mA		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0A	30			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	25			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0A	17			V
Turn-ON Time	t_{on}	See specified Test Circuit.		0.14		μs
Storage Time	t_{stg}	See specified Test Circuit.		0.8		μs
Fall Time	t_f	See specified Test Circuit.		0.12		μs

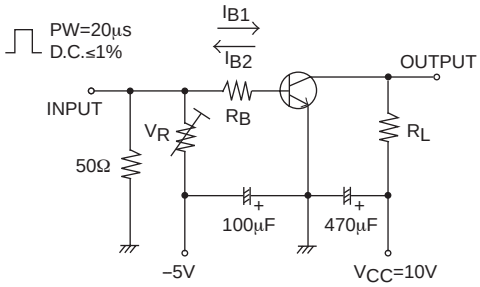
Package Dimensions

unit : mm (typ)

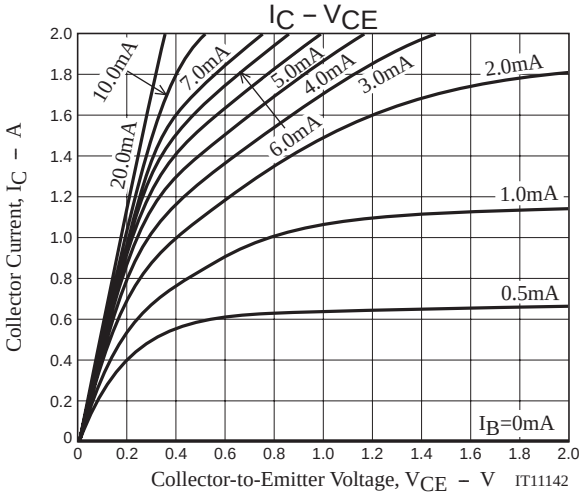
7517-002

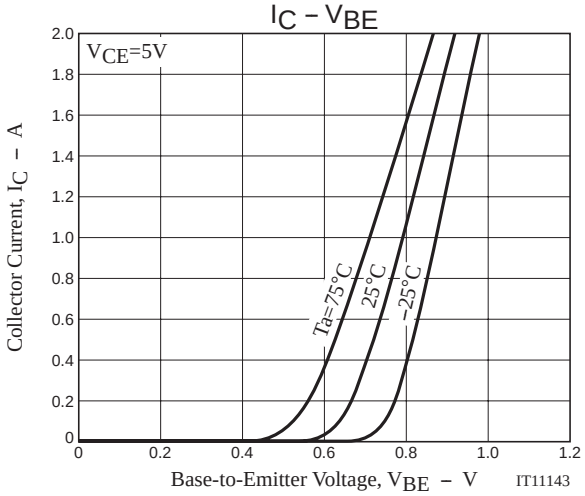


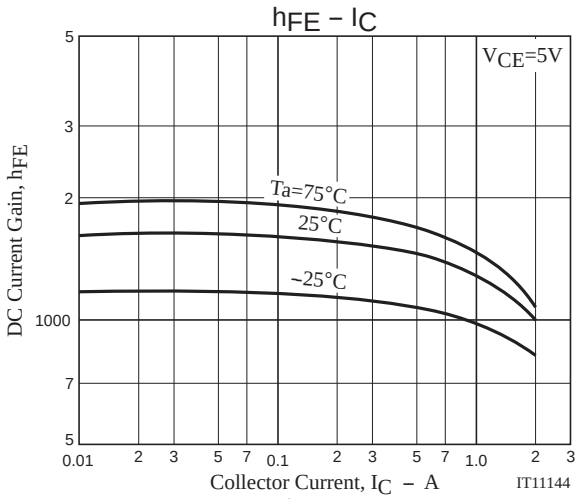
Switching Time Test Circuit

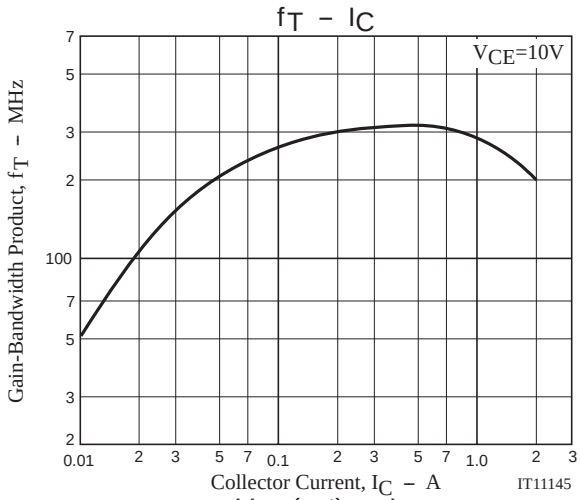


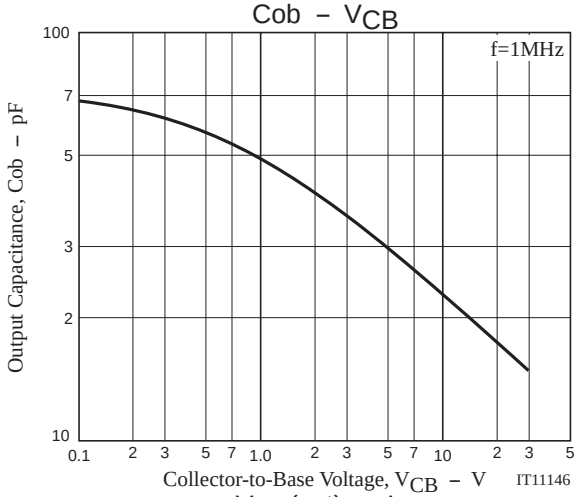
$7I_{B1}=-7I_{B2}=I_C=700mA$

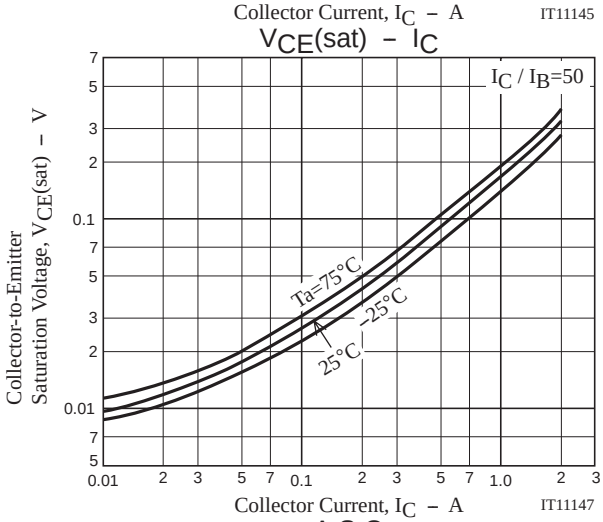


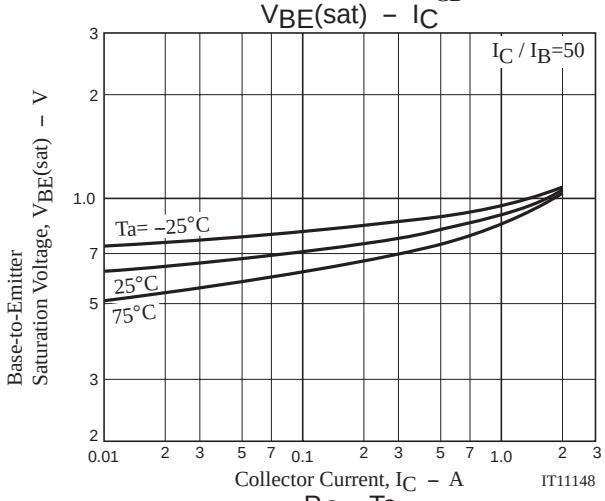


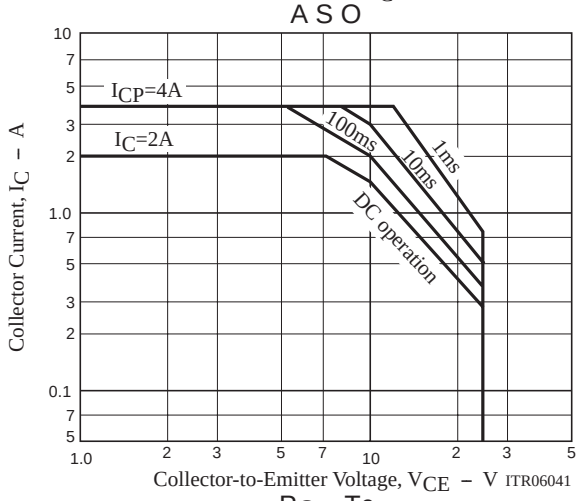

hFE – IC
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT11144

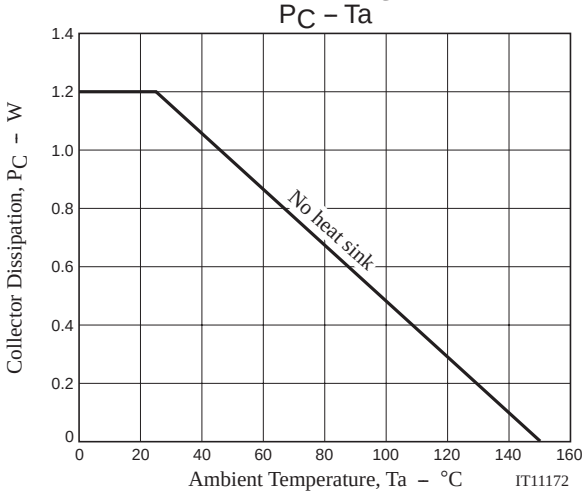

fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT11145

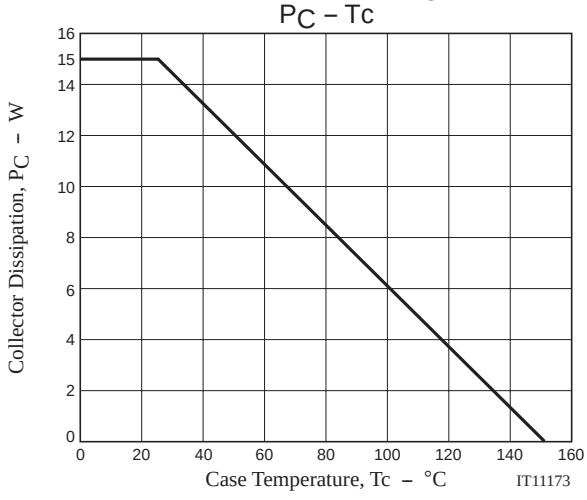

Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT11146


VCE(sat) – IC
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11147


VBE(sat) – IC
IC / IB=50
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT11148


A S O
ICP=4A
IC=2A
100ms
10ms
1ms
DC operation
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR06041


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT11172


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT11173