Ordering number : ENA1799

SANYO Semiconductors
DATA SHEET

2SA2222SG — PNP Epitaxial Planar Silicon Transistor
High-Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers

Features

- Adoption of MBIT process
- Large current capacitance (I_C=–10A)
- Low collector-to-emitter saturation voltage (V_{CE}(sat)=–250mV(typ.))
- High-speed switching (t_f=22ns(typ.))

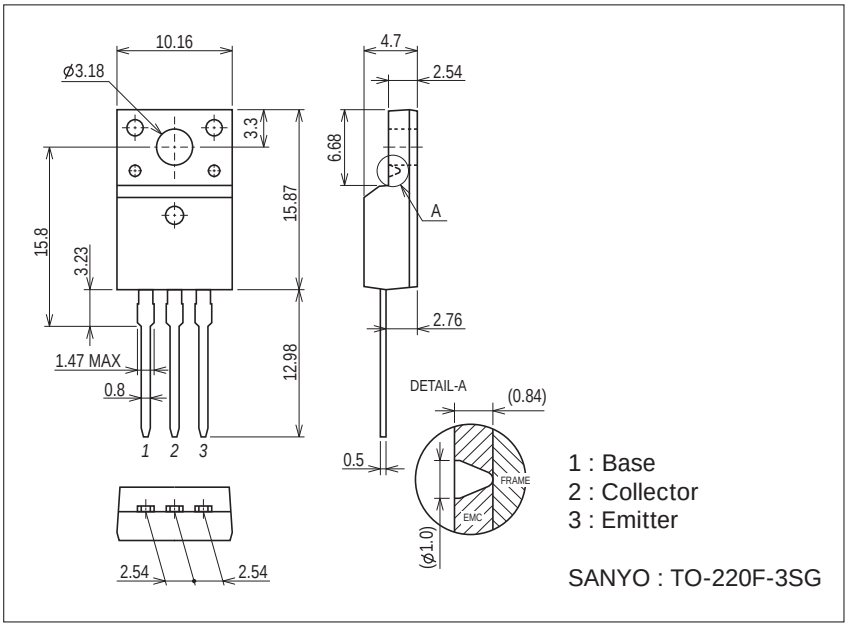
Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		–50	V
Collector-to-Emitter Voltage	V_{CEO}		–50	V
Emitter-to-Base Voltage	V_{EBO}		–6	V
Collector Current	I_C		–10	A
Collector Current (Pulse)	I_{CP}		–13	A
Base Current	I_B		–2	A
Collector Dissipation	P_C	Tc=25°C, P_T≤1s	25	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Package Dimensions

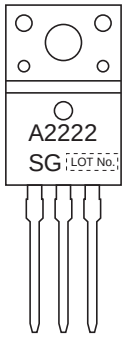
unit : mm (typ)
7529-002



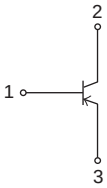
Product & Package Information

- Package : TO-220F-3SG
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./magazine

Marking



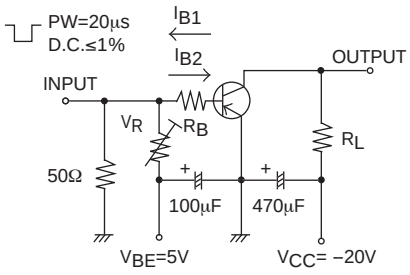
Electrical Connection



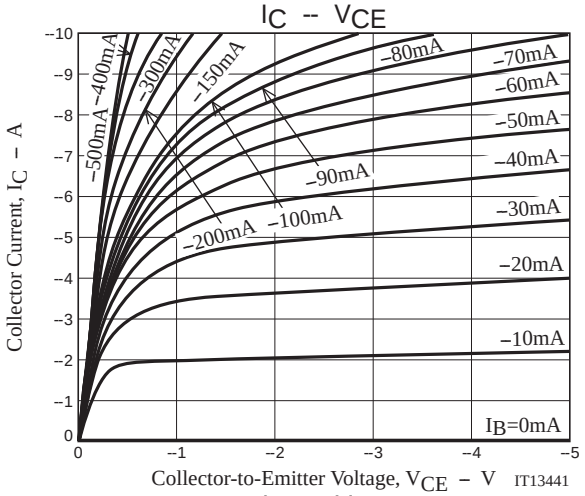
Electrical Characteristics at Ta=25°C

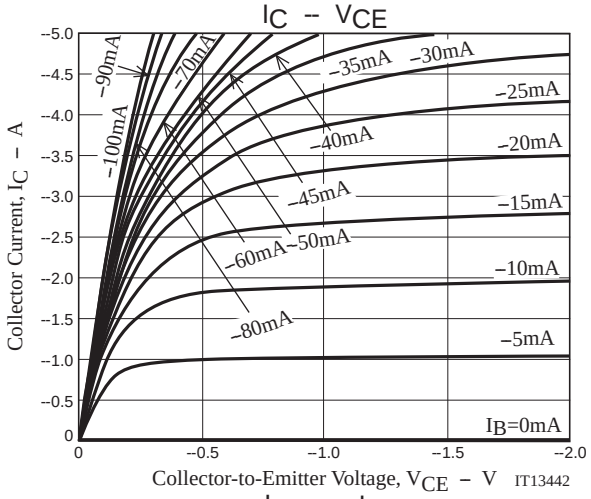
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=−40V, I_E=0A			−10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−4V, I_C=0A			−10	μA
DC Current Gain	h_{FE}	V_{CE}=−2V, I_C=−270mA	150		450	
Gain-Bandwidth Product	f_T	V_{CE}=−10V, I_C=−1A		230		MHz
Output Capacitance	Cob	V_{CB}=−10V, f=1MHz		115		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−6A, I_B=−300mA		−250	−500	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−6A, I_B=−300mA			−1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=−100μA, I_E=0A	−50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=−1mA, R_{BE}=∞	−50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=−100μA, I_C=0A	−6			V
Turn-On Time	t_{on}	See specified Test Circuit.		40		ns
Storage Time	t_{stg}	See specified Test Circuit.		240		ns
Fall Time	t_f	See specified Test Circuit.		22		ns

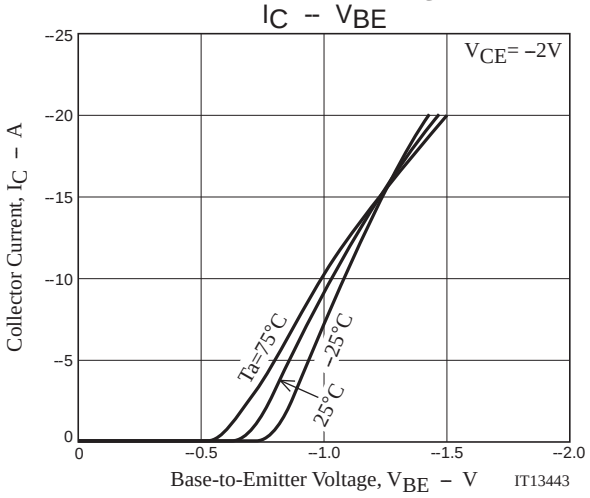
Switching Time Test Circuit

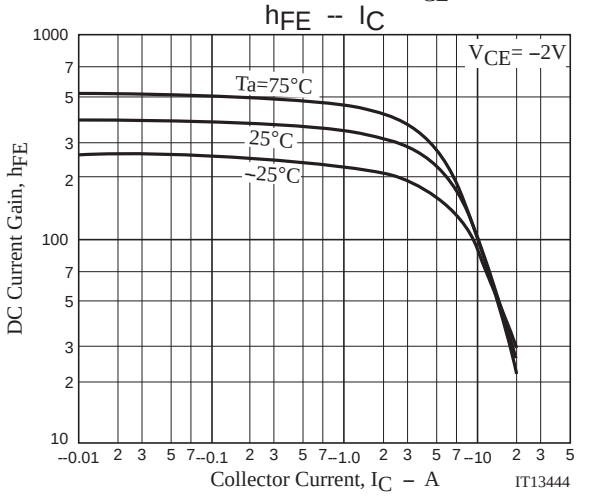


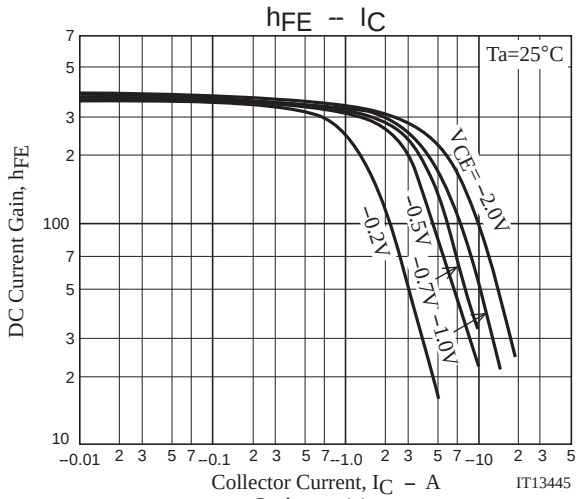
I_C=20I_{B1}= −20I_{B2}= −5A

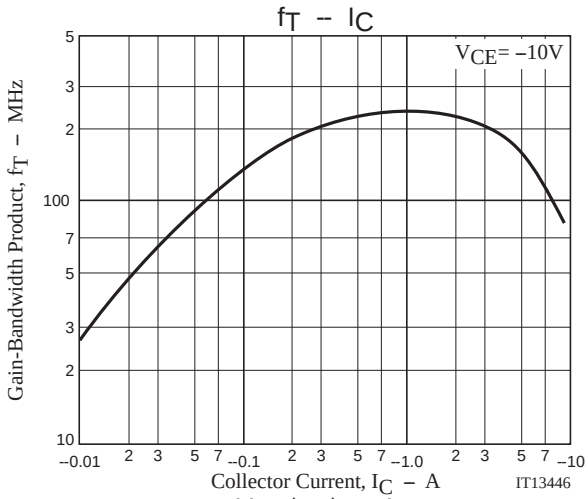


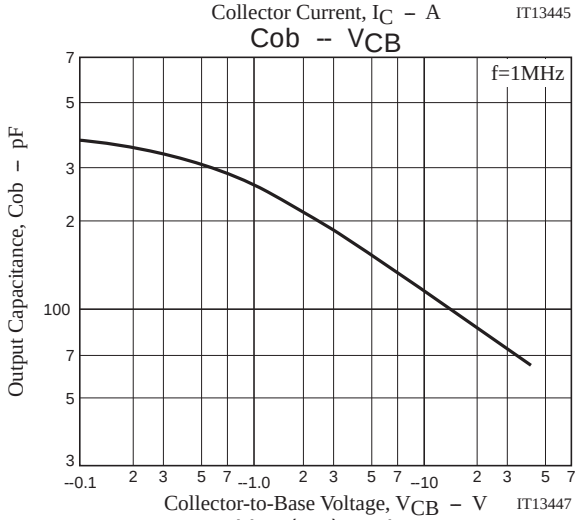


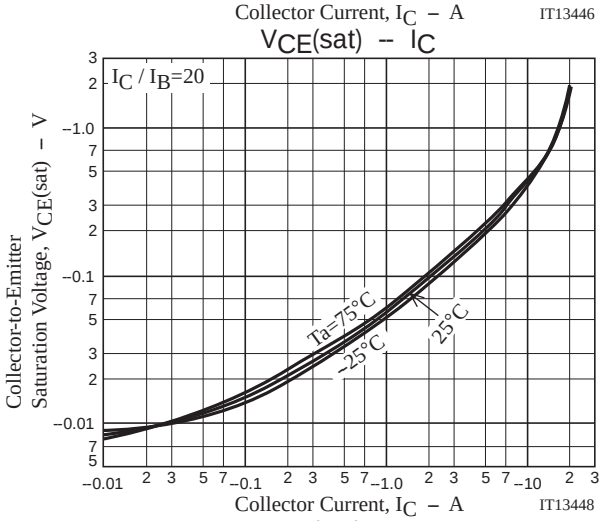


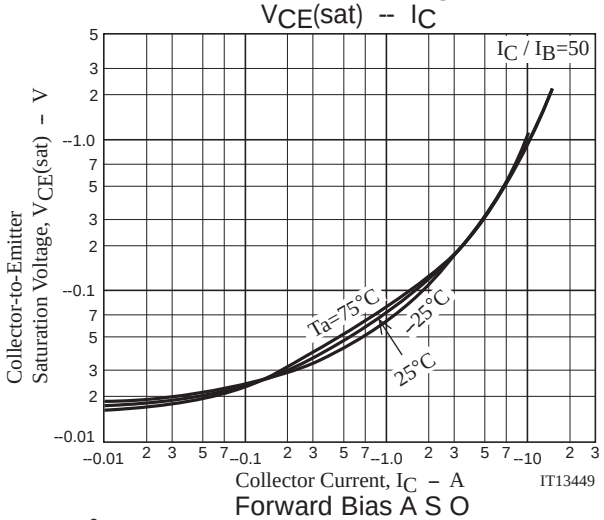


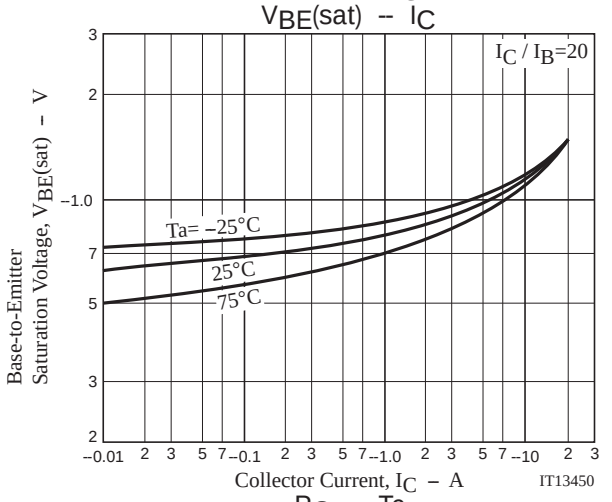

hFE -- IC
Ta=25°C
VCE= −2.0V
−1.0V
−0.7V
−0.5V
−0.2V
DC Current Gain, hFE
Collector Current, IC − A
IT13445

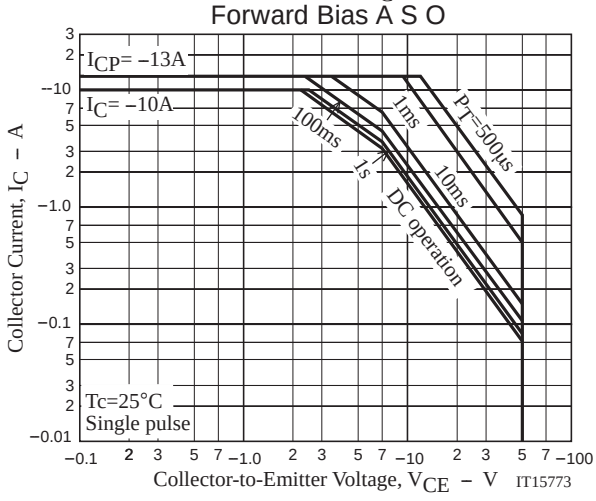

fT -- IC
VCE= −10V
Gain-Bandwidth Product, fT − MHz
Collector Current, IC − A
IT13446

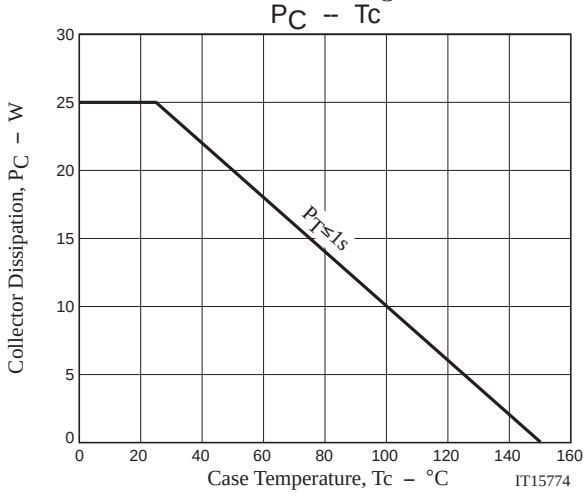

Cob -- VCB
f=1MHz
Output Capacitance, Cob − pF
Collector-to-Base Voltage, VCB − V
IT13447


VCE(sat) -- IC
IC / IB=20
Ta=75°C
25°C
−25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) − V
Collector Current, IC − A
IT13448


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
IT13449


VBE(sat) -- IC
IC / IB=20
Ta= −25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) − V
Collector Current, IC − A
IT13450


Forward Bias A S O
ICP= −13A
IC= −10A
100ms
1ms
PT=500µs
10ms
1s
DC operation
Tc=25°C
Single pulse
Collector Current, IC − A
Collector-to-Emitter Voltage, VCE − V
IT15773


PC -- Tc
PT=1s
Collector Dissipation, PC − W
Case Temperature, Tc − °C
IT15774

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