Ordering number : ENA1422

SANYO Semiconductors
DATA SHEET

An ON Semiconductor Company

ECH8101 — PNP Epitaxial Planar Silicon Transistor
High-Current Switching Applications

Applications

- High-power IGBT / MOSFET gate drivers, DC / DC converters, lamp drivers, motor drivers.

Features

- Adoption of FBET, MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High speed switching.
- High allowable power dissipation.
- Halogen free compliance.

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_{CES}		-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}		-20	A
Base Current	I_B		-1	A
Collector Dissipation	P_C	When mounted on ceramic substrate (900mm^2×0.8mm)	1.6	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking : GA

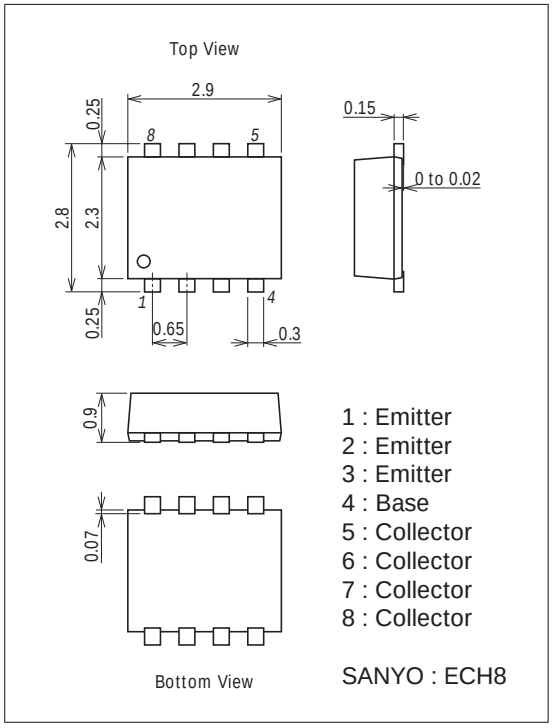
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}= -40V, I_E=0A			-0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}= -4V, I_C=0A			-0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}= -2V, I_C= -500mA	200		560	
	$h_{FE}2$	V_{CE}= -2V, I_C= -4A	140			
	$h_{FE}3$	V_{CE}= -2V, I_C= -10A	90			
Gain-Bandwidth Product	f_T	V_{CE}= -10V, I_C= -500mA		140		MHz
Output Capacitance	Cob	V_{CB}= -10V, f=1MHz		115		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C= -6A, I_B= -300mA		-100	-170	mV
	V_{CE}(sat)2	I_C= -2A, I_B= -40mA		-70	-120	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C= -2A, I_B= -40mA		-0.85	-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C= -10μA, I_E=0A	-50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C= -100μA, R_{BE}=0Ω	-50			V
	$V_{(BR)CEO}$	I_C= -1mA, R_{BE}=∞	-50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E= -10μA, I_C=0A	-6			V
Turn-On Time	t_{on}	See specified Test Circuit.		80		ns
Storage Time	t_{stg}	See specified Test Circuit.		137		ns
Fall Time	t_f	See specified Test Circuit.		23		ns

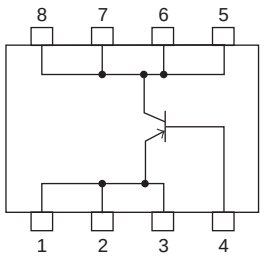
Package Dimensions

unit : mm (typ)

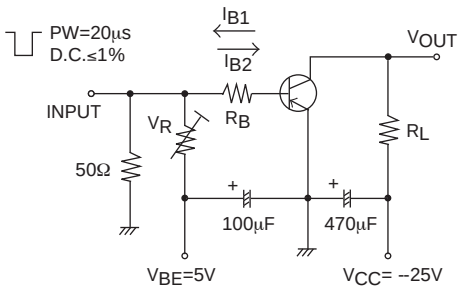
7011A-005



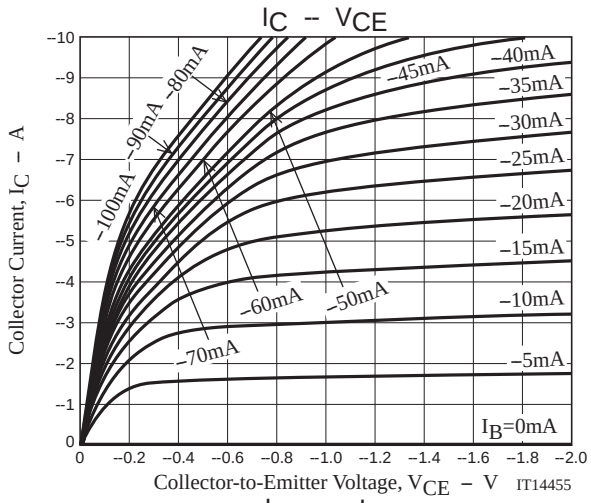
Electrical Connection

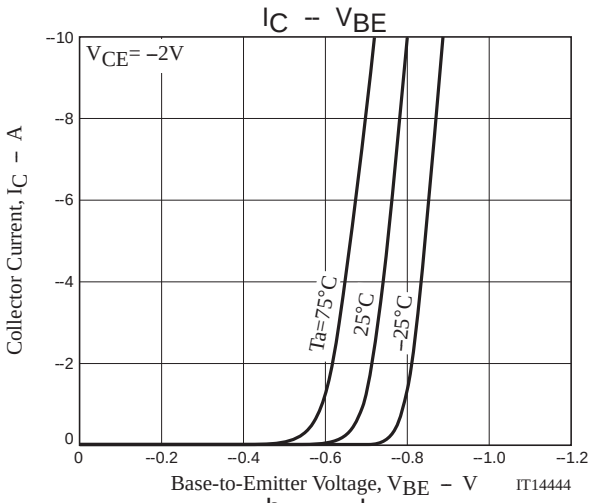


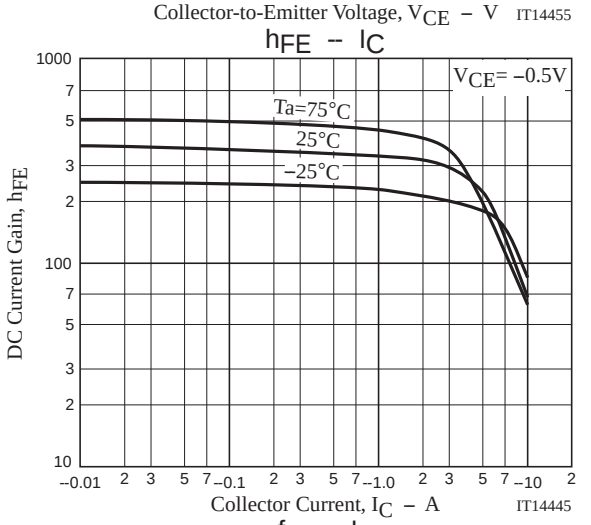
Switching Time Test Circuit

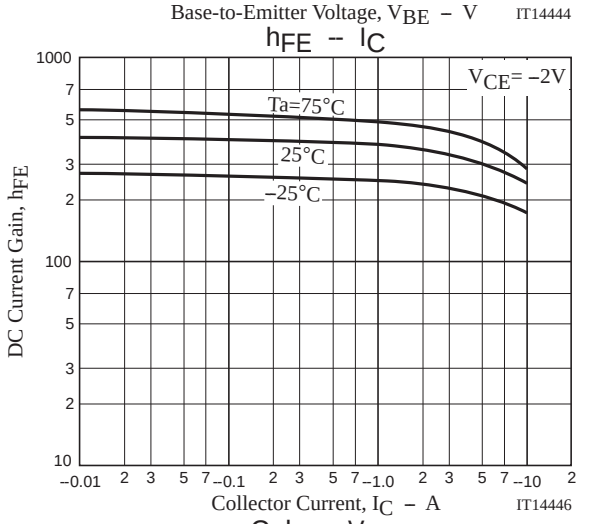


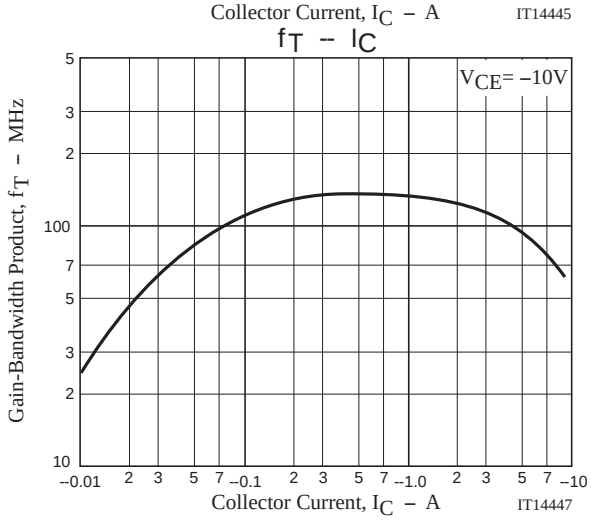
I_C= −50I_{B1}=25I_{B2}= −5A

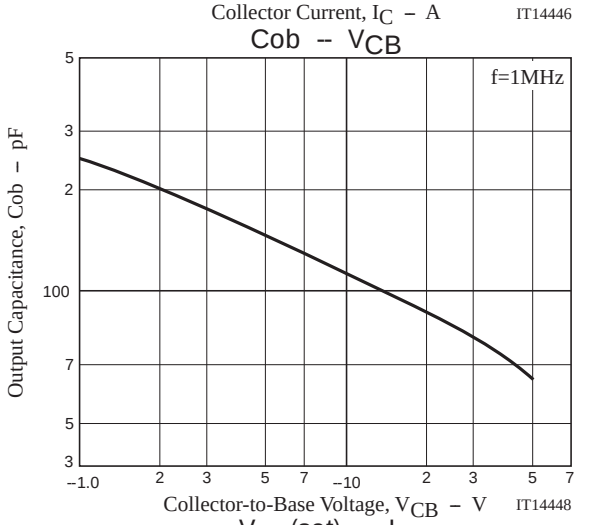

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT14455
–40mA
–35mA
–30mA
–25mA
–20mA
–15mA
–10mA
–5mA
–45mA
–80mA
–90mA
–100mA
–60mA
–50mA
–70mA
IB=0mA

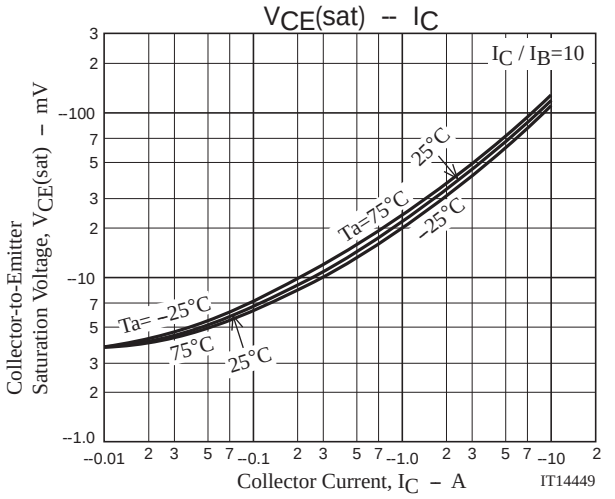

IC – VBE
VCE= –2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT14444
Ta=75°C
25°C
–25°C

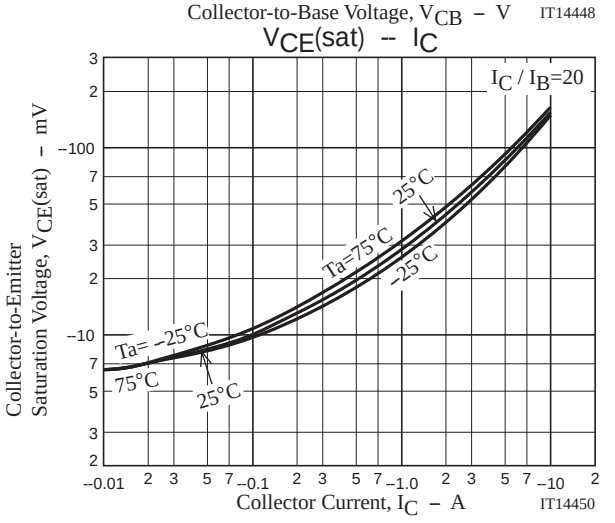

hFE – IC
VCE= –0.5V
DC Current Gain, hFE
Collector Current, IC – A
IT14445
Ta=75°C
25°C
–25°C


hFE – IC
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT14446
Ta=75°C
25°C
–25°C


fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT14447


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT14448


VCE(sat) – IC
IC / IB=10
Collector-to-Emitter
Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT14449
25°C
Ta=75°C
–25°C
Ta= –25°C
75°C
25°C


VCE(sat) – IC
IC / IB=20
Collector-to-Emitter
Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT14450
25°C
Ta=75°C
–25°C
Ta= –25°C
75°C
25°C