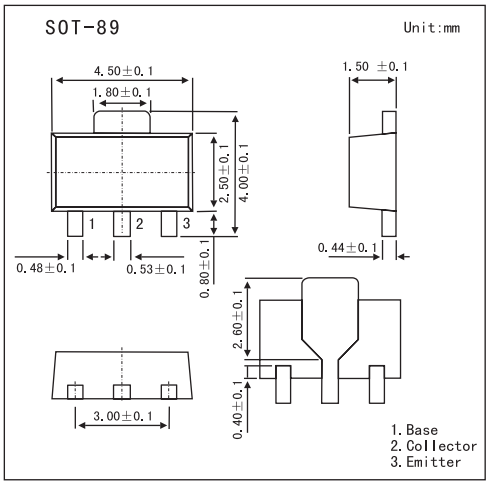
High-Voltage Switching Applications

2SC3649



■ Features

- Adoption of FBET, MBIT Processes
- High Breakdown Voltage and Large Current Capacity

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	1.5	A
Collector Current (Pulse)	I_{CP}	2.5	A
Collector Power Dissipation	P_C	500	mW
	P_C *	1.5	W
Jumction temperature	T_j	150	℃
Storage temperature Range	T_{stg}	-55 to +150	℃

* Mounted on ceramic board (250 mm^2 x 0.8 mm)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector Cut-off Current	I_{CBO}	V_{CB} = 120V , I_E = 0			1	uA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V , I_C = 0			1	uA
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10uA , I_E = 0	180			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA , R_{BE} = ∞	160			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10uA , I_C = 0	6			V
DC Current Gain	h_{FE}	V_{CE} = 5V , I_C = 100mA	100		400	
		V_{CE} = 5V , I_C = 10mA	80			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 500mA , I_B = 50mA		0.13	0.45	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 500mA , I_B = 50mA		0.85	1.2	V
Gain-Bandwidth Product	f_T	V_{CE} = 10V , I_C = 50mA		120		MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V , I_E = 0 , f = 1MHz		14		pF
Turn-On Time	t_{on}	See Test Circuit.		40		ns
Storage Time	t_{stg}			1.2		us
Fall Time	t_f			80		ns

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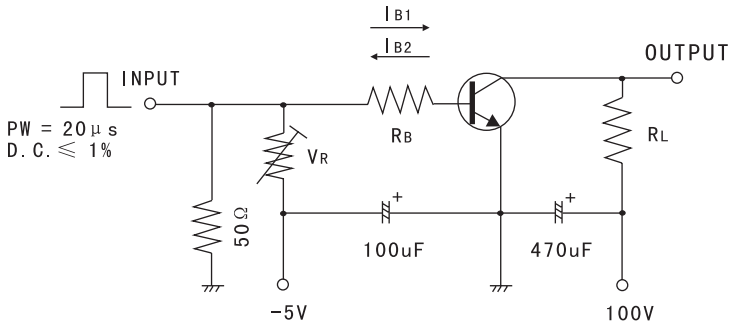
■ Test Circuit

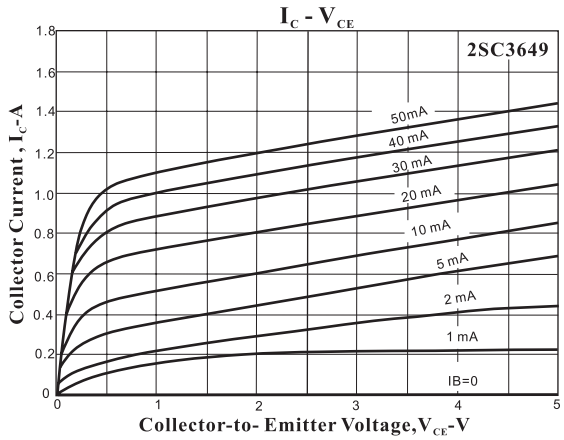


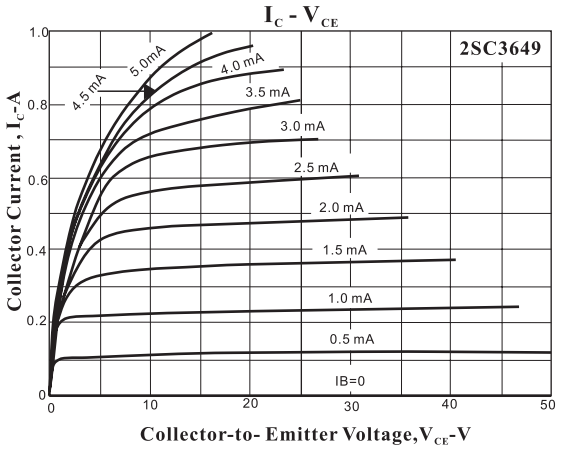
$10I_{B1} = -10I_{B2} = I_C = 0.7A$
(For PNP , the polarity is reversed.)

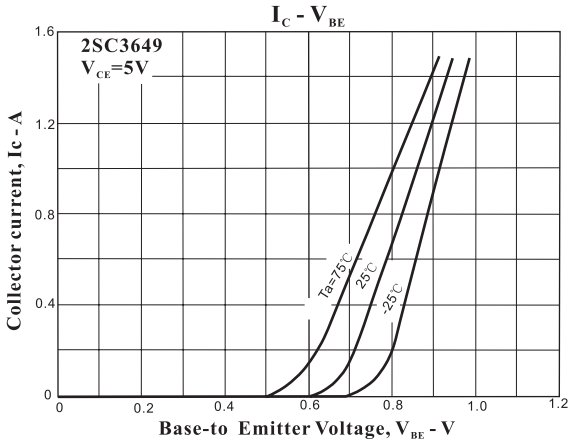
■ hFE Classification

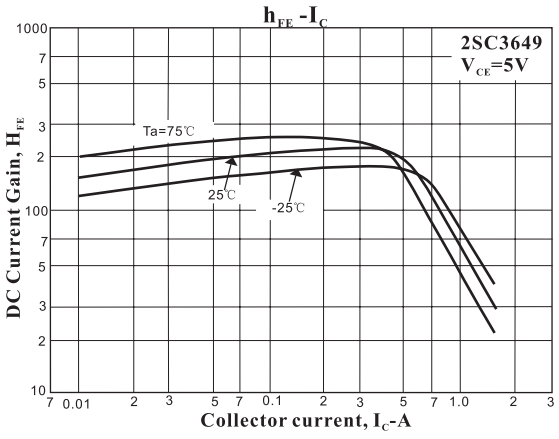
Marking	CE		
Rank	R	S	T
hFE	100 ～ 200	140 ～ 280	200 ～ 400

■ Electrical Characteristics Curves









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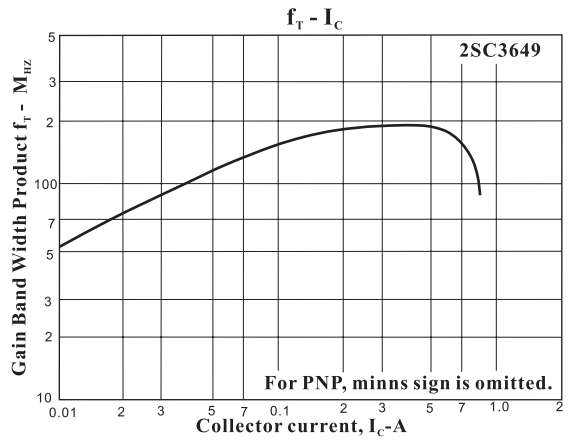
f_T - I_C
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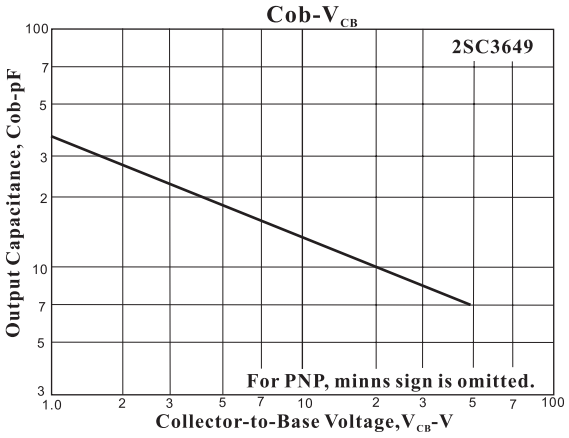
Gain Band Width Product f_T - MHZ
For PNP, minns sign is omitted.
Collector current, I_C-A


Cob-V_{CB}
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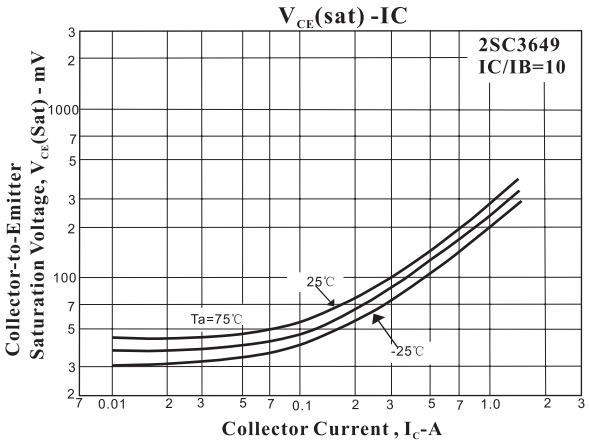
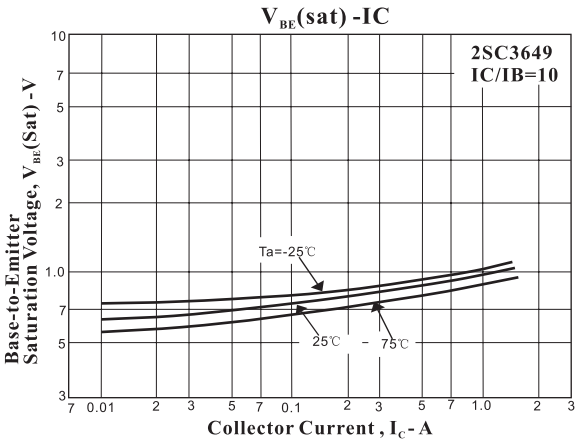
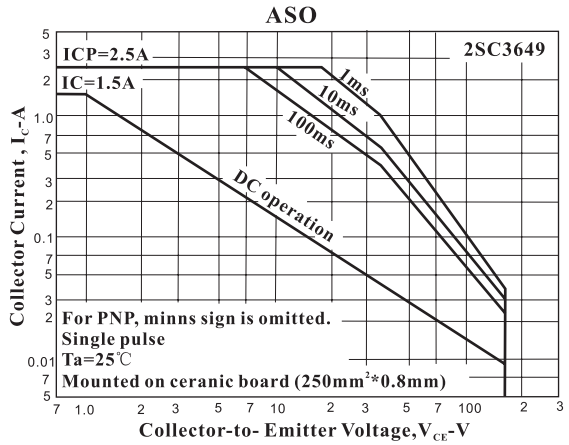
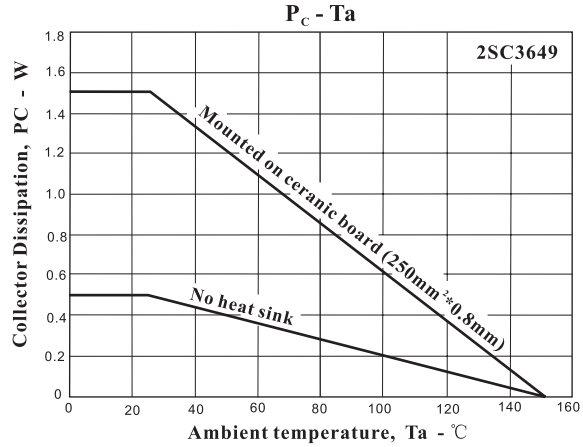
Output Capacitance, Cob-pF
For PNP, minns sign is omitted.
Collector-to-Base Voltage,V_{CB}-V


V_{CE}(sat) -IC
2SC3649
IC/IB=10
Collector-to-Emitter Saturation Voltage, V_{CE}(Sat) - mV
25℃
Ta=75℃
-25℃
Collector Current , I_C-A


V_{BE}(sat) -IC
2SC3649
IC/IB=10
Base-to-Emitter Saturation Voltage, V_{BE}(Sat) -V
Ta=-25℃
25℃
75℃
Collector Current , I_C - A


ASO
2SC3649
ICP=2.5A
IC=1.5A
1ms
10ms
100ms
DC operation
Collector Current , I_C-A
For PNP, minns sign is omitted.
Single pulse
Ta=25℃
Mounted on ceranic board (250mm²*0.8mm)
Collector-to- Emitter Voltage,V_{CE}-V


P_C - Ta
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Collector Dissipation, PC - W
Mounted on ceranic board (250mm²*0.8mm)
No heat sink
Ambient temperature, Ta - ℃