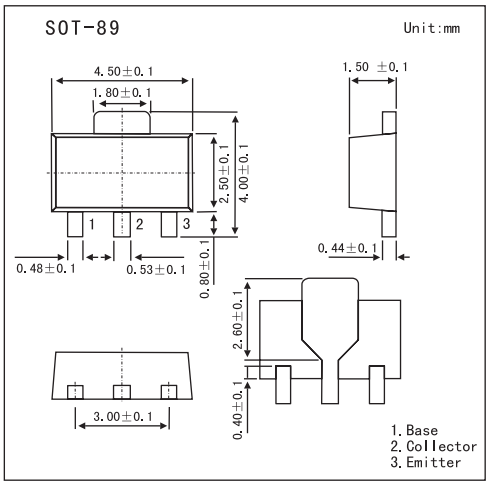
High-Speed Switching Applications

2SA1729



■ Features

- Adoption of FBET, MBIT Process.
- Large Current Capacity.
- Low Collector-to-Emitter Saturation Voltage.
- High-Speed Switching.
- Small-Sized Package.

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-1.5	A
Collector Current (Pulse)	I_{CP}	-3	A
Collector Dissipation	P_C *	1.3	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} = -40V , I_E = 0			-1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = -3V , I_C = 0			-1	μA
DC Current Gain	h_{FE}	V_{CE} = -2V , I_C = -100mA	70		280	
		V_{CE} = -2V , I_C = -1.5A	25			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = -800mA , I_B = -40mA		-0.3	-0.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = -800mA , I_B = -40mA		-0.9	-1.3	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = -10μA, I_E = 0	-50			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = -1mA, R_{BE} = ∝	-40			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = -10μA, I_C = 0	-5			V
Gain-Bandwidth Product	f_T	V_{CE} = -2V , I_C = -100mA		300		MHz
Output Capacitance	C_{ob}	V_{CB} = -10V , f = 1MHz		18		pF
Turn-ON Time	t_{on}	See Test Circuit		50	100	ns
Storage Time	t_{stg}			120	220	ns
Turn-OFF Time	t_{off}			150	300	ns

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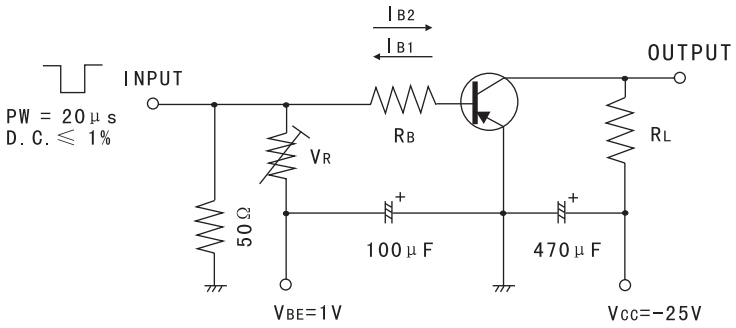
■ Test Circuit

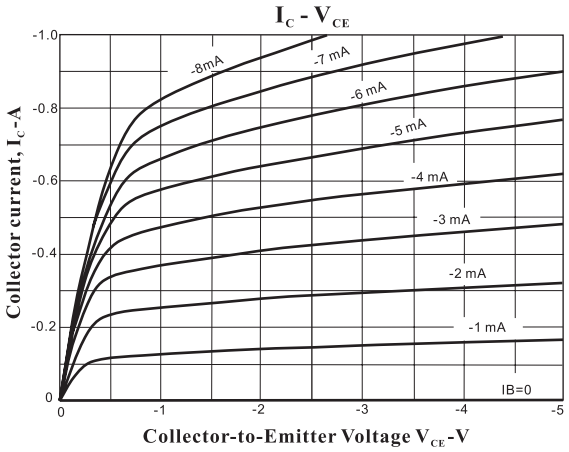


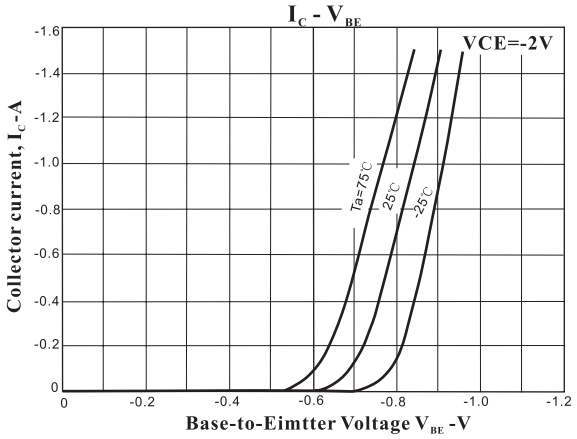
$20I_{B1} = -20I_{B2} = I_C = -800mA$

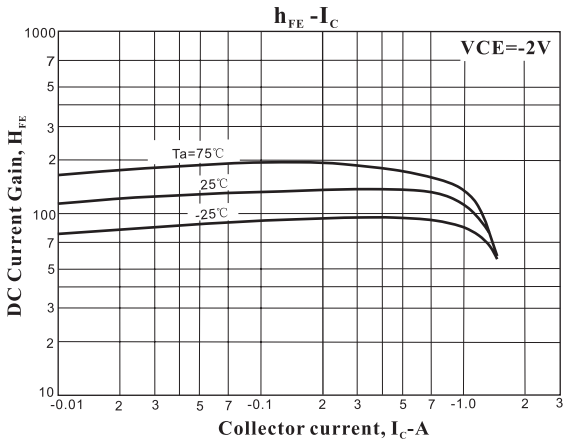
■ hFE Classification

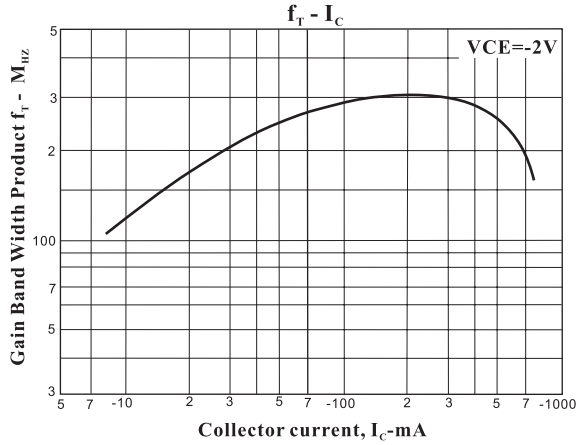
Marking	AG		
Rank	Q	R	S
hFE	70 ～ 140	100 ～ 200	140 ～ 280

■ Electrical Characteristics Curves









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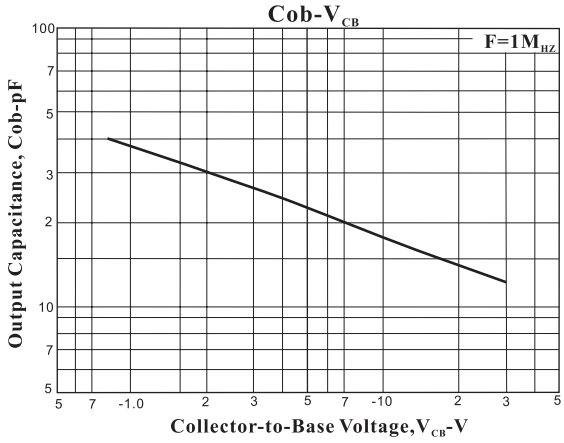
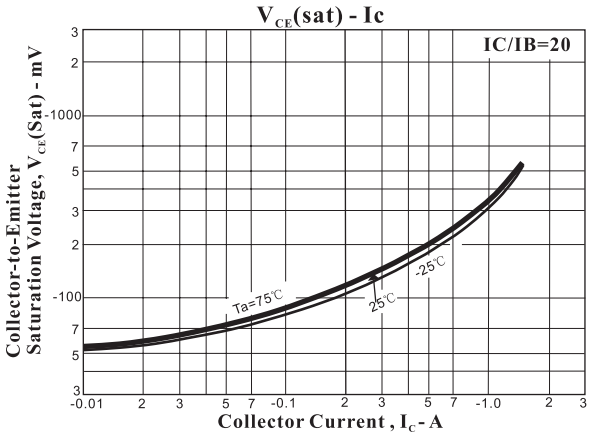
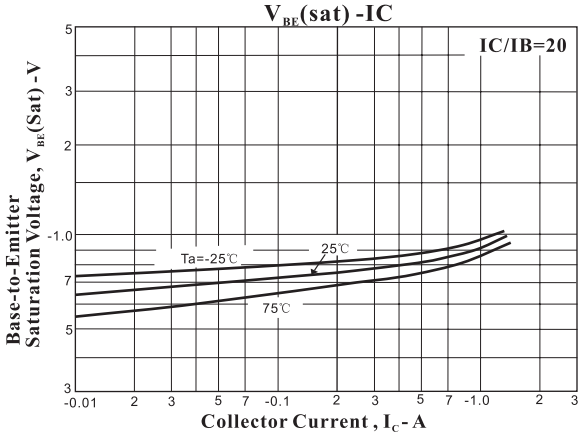
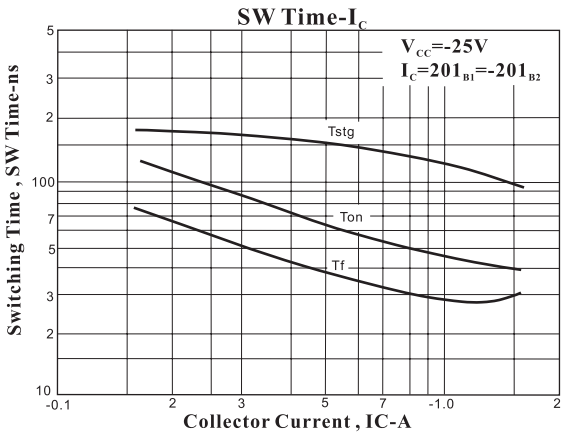
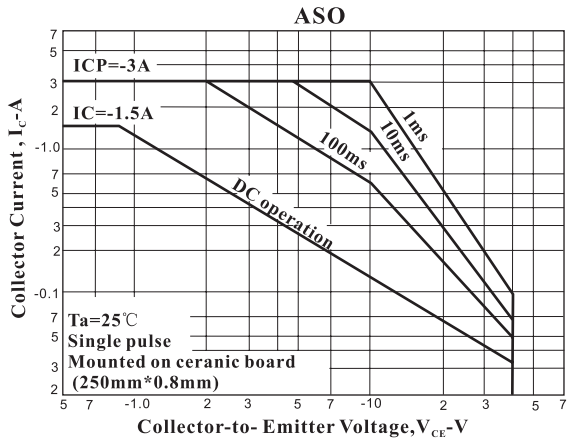
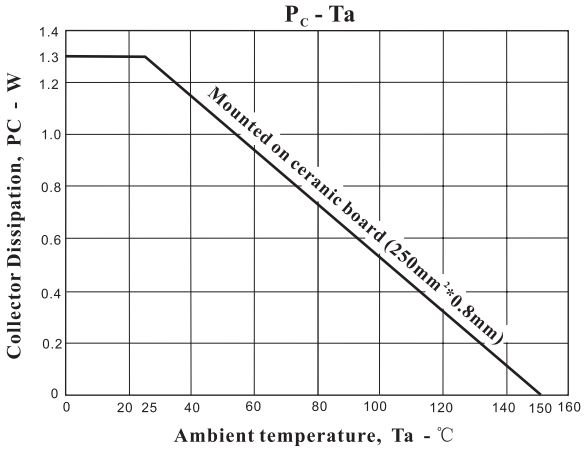

Cob-V_{CB}
F=1M$_{HZ}$
Output Capacitance, Cob-pF
Collector-to-Base Voltage,V_{CB}-V


V_{CE}(sat) - Ic
IC/IB=20
Collector-to-Emitter Saturation Voltage, V_{CE}(Sat) - mV
Ta=75℃
25℃
-25℃
Collector Current , I_C - A


V_{BE}(sat) -IC
IC/IB=20
Base-to-Emitter Saturation Voltage, V_{BE}(Sat) - V
Ta=-25℃
25℃
75℃
Collector Current , I_C - A


SW Time-I_C
V_{CC}=-25V
I_C=201$_{B1}$=-201$_{B2}$
Tstg
Ton
Tf
Switching Time , SW Time-ns
Collector Current , IC-A


ASO
ICP=-3A
IC=-1.5A
1ms
10ms
100ms
DC operation
Ta=25℃
Single pulse
Mounted on ceranic board
(250mm*0.8mm)
Collector Current , I_C-A
Collector-to- Emitter Voltage,V_{CE}-V


P_C - Ta
Mounted on ceranic board (250mm^2*0.8mm)
Collector Dissipation, PC - W
Ambient temperature, Ta - ℃