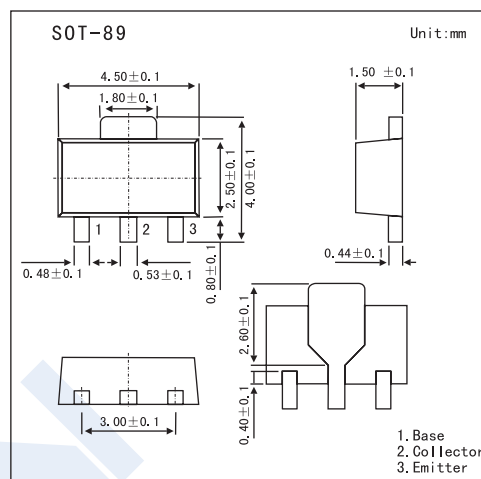


Power Switching Applications

2SA1681

■ Features

- Low Saturation Voltage: $V_{CE(sat)} = -0.5V(max)(I_C = -1A)$
- High Speed Switching Time: $t_{stg} = 300ns(typ.)$
- Small Flat Package
- $P_C = 1.0$ to $2.0W$ (mounted on a ceramic substrate)
- Complementary to 2SC4409

■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current	I_C	-2	A
Base Current	I_B	-0.2	A
Collector Power Dissipation	P_C	0.5	W
	P_C^*	1	
Junction temperature	T_j	150	$^\circ C$
Storage temperature Range	T_{stg}	-55 to +150	$^\circ C$

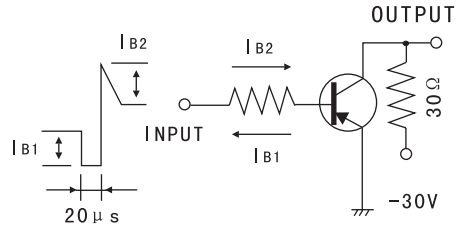
* Mounted on a ceramic board ($250\text{ mm}^2 \times 0.8\text{ t}$)

■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector Cut-off Current	I_{CBO}	$V_{CB} = -60V, I_E = 0$			-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -6V, I_C = 0$			-0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = -2V, I_C = -100mA$	120		400	
		$V_{CE} = -2V, I_C = -1.5A$	40			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1A, I_B = -0.05A$			-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1A, I_B = -0.05A$			-1.2	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10mA, I_B = 0$	-50			V
Transition Frequency	f_T	$V_{CE} = -2V, I_C = -100mA$		100		MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0, f = 1MHz$		23		pF
Turn-ON Time	t_{on}	See Test Circuit		0.1		μs
Storage Time	t_{stg}			0.3		
Fall Time	t_f			0.1		

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■ Test Circuit

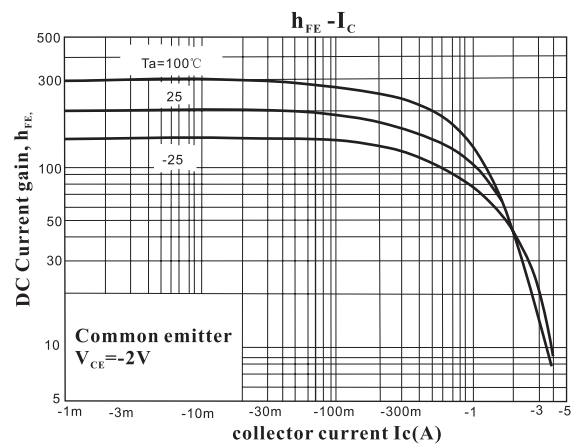
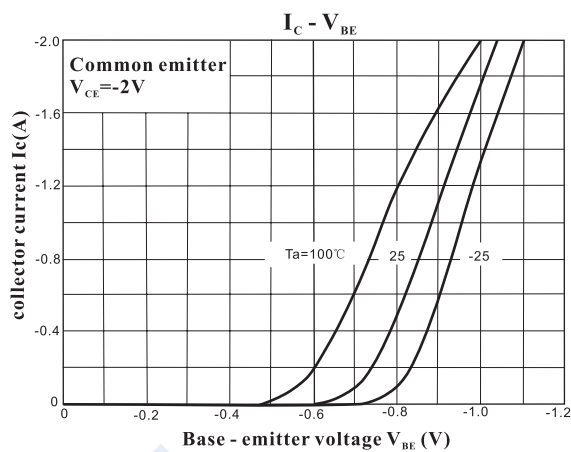
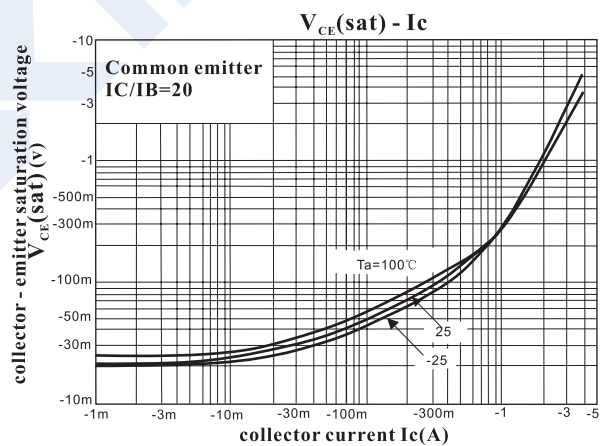
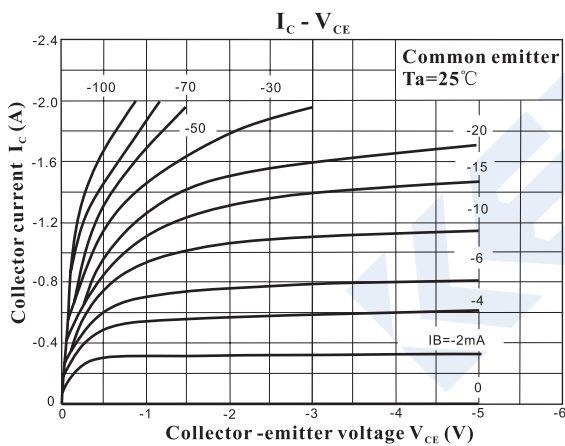


$$-I_{B1} = I_{B2} = 0.05A, \text{ DUTY CYCLE} \leq 1\%$$

■ Marking

Marking	LA
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■ Electrical Characteristics Curves



2SA1681

