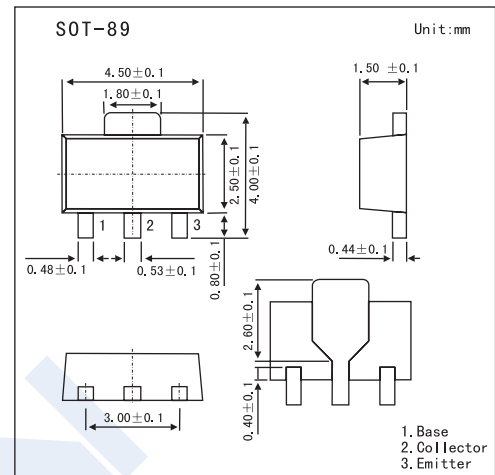


## Power Switching Applications

## 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	$V_{CB0}$	-60	V
Collector-Emitter Voltage	$V_{CE0}$	-50	V
Emitter-Base Voltage	$V_{EB0}$	-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	$^\circ C$

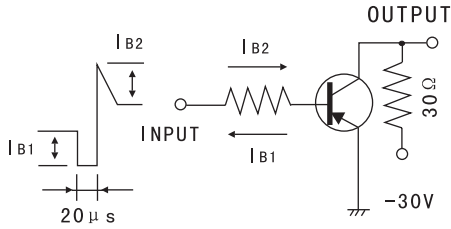
\* Mounted on a ceramic board ( $250\text{ mm}^2 \times 0.8\text{ t}$ )

### 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	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -6V, I_C = 0$			-0.1	$\mu A$
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		$\mu s$
Storage Time	$t_{stg}$			0.3		
Fall Time	$t_f$			0.1		

### 2SA1681

■ Test Circuit

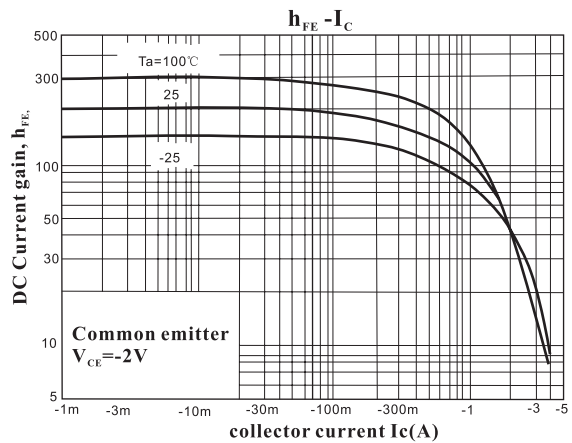
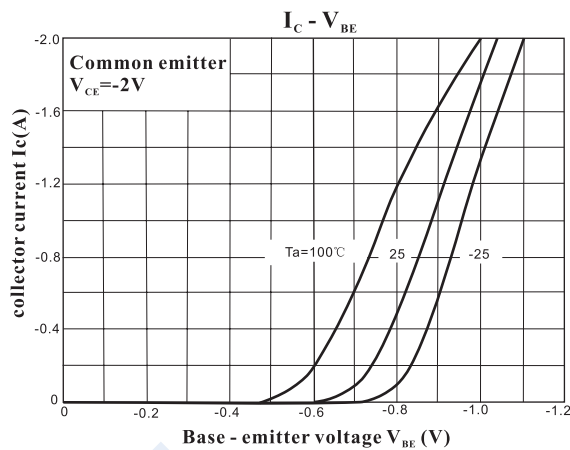
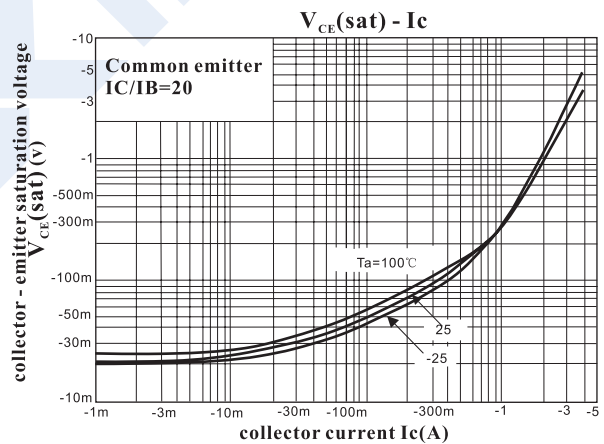
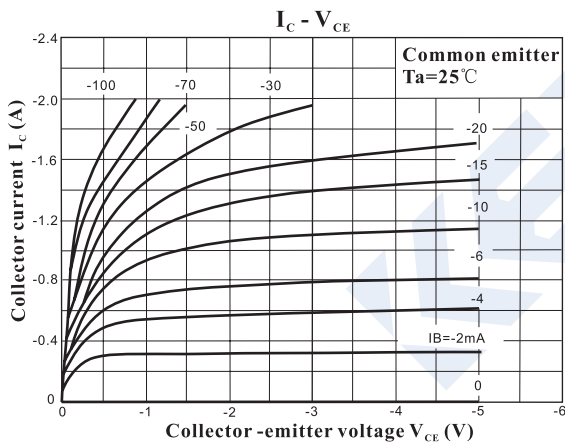


$-I_{B1} = I_{B2} = 0.05A$  , DUTY CYCLE  $\leq 1\%$

■ Marking

Marking	LA
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■ Electrical Characteristics Curves



2SA1681

