



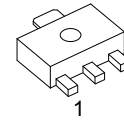
# 2SC3648

## NPN SILICON TRANSISTOR

### HIGH-VOLTAGE SWITCHING PREDRIVER APPLICATIONS

#### FEATURES

- \* High Breakdown Voltage and Large Current Capacity
- \* Fast Switching Speed
- \* Over Current Protection Function



SOT-89

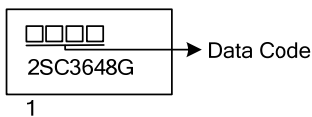
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
2SC3648G-x-AB3-R	SOT-89	B	C	E	Tape Reel

Note: Pin Assignment: B: Base C: Collector E: Emitter

<p>2SC3648G-x-AB3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89</p> <p>(3) x: refer to Classification of <math>h_{FE}</math></p> <p>(4) G: Halogen Free and Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATING ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	$V_{CBO}$	180	V
Collector to Emitter Voltage	$V_{CEO}$	160	V
Emitter to Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	0.7	A
Collector Current (Pulse)	$I_{CP}$	1.5	A
Collector Dissipation	$P_C$	500	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

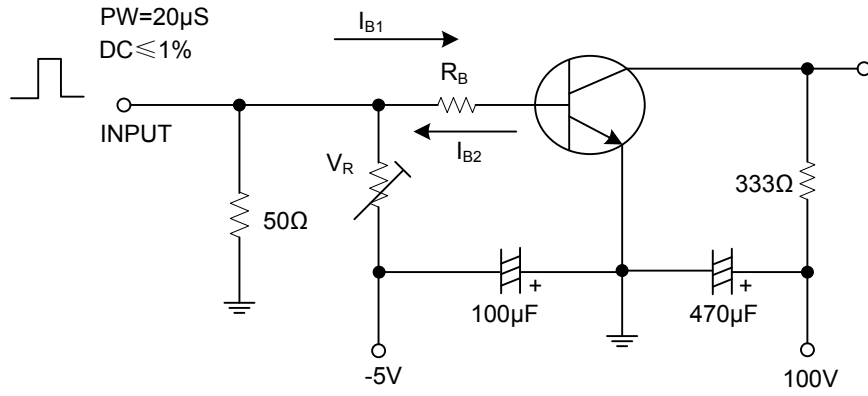
■ ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 10\mu\text{A}$ , $I_E = 0$	180			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 1$ , $R_{BE} = \infty$	160			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 10\mu\text{A}$ , $I_C = 0$	6			V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 120\text{V}$ , $I_E = 0$			0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 4\text{V}$ , $I_C = 0$			0.1	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 250\text{mA}$ , $I_B = 25\text{mA}$		0.12	0.4	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 250\text{mA}$ , $I_B = 25\text{mA}$		0.85	1.2	V
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $f = 1\text{MHz}$		8		pF
DC Current Gain	$h_{FE1}$	$V_{CE} = 5\text{V}$ , $I_C = 100\text{mA}$	100		400	
	$h_{FE2}$	$V_{CE} = 5\text{V}$ , $I_C = 10\text{mA}$	90			
Turn-on Time	$t_{ON}$	See specified Test circuit		50		ns
Storage Time	$t_{STG}$	See specified Test circuit		1000		ns
Fall Time	$t_F$	See specified Test circuit		60		ns
Gain-Bandwidth Product	$f_T$	$V_{CE} = 5\text{V}$ , $I_C = 50\text{mA}$		120		MHz

■ CLASSIFICATION OF  $h_{FE1}$

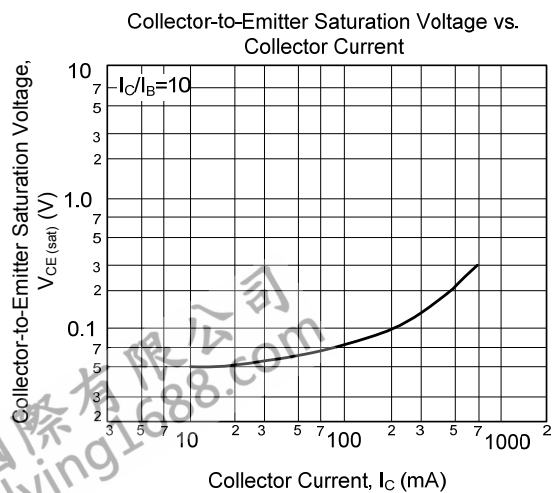
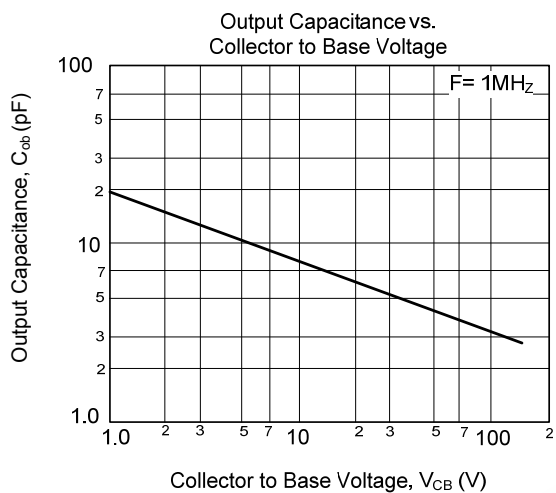
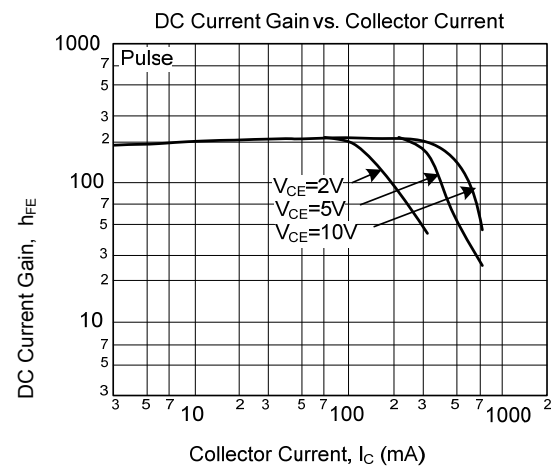
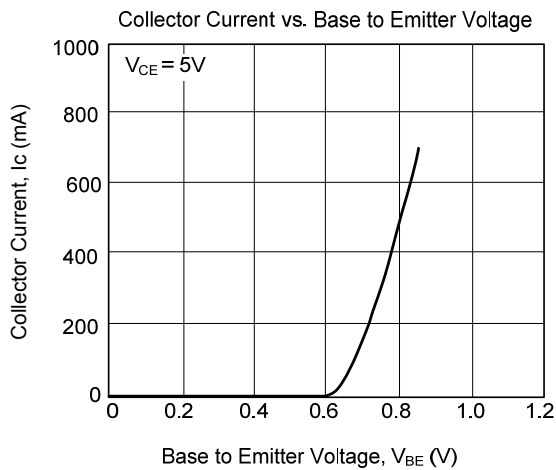
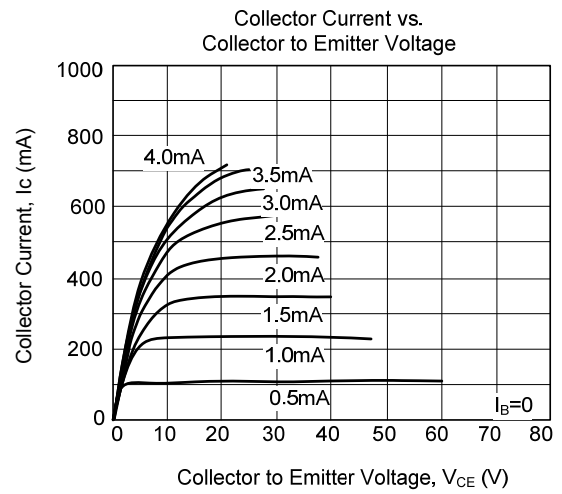
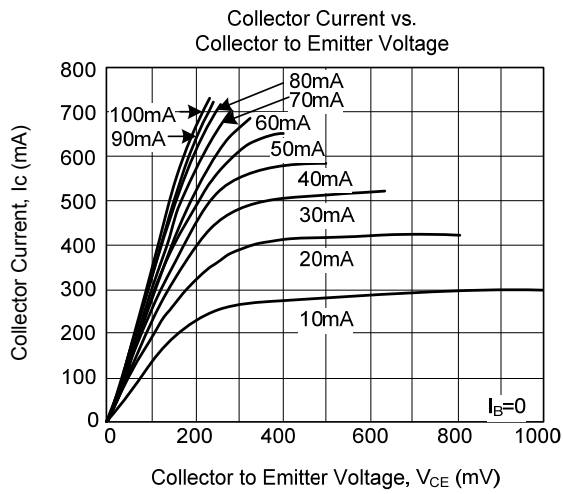
RANK	R	S	T
RANGE	100 ~ 200	140 ~ 280	200 ~ 400

## SWITCHING TIME TEST CIRCUIT

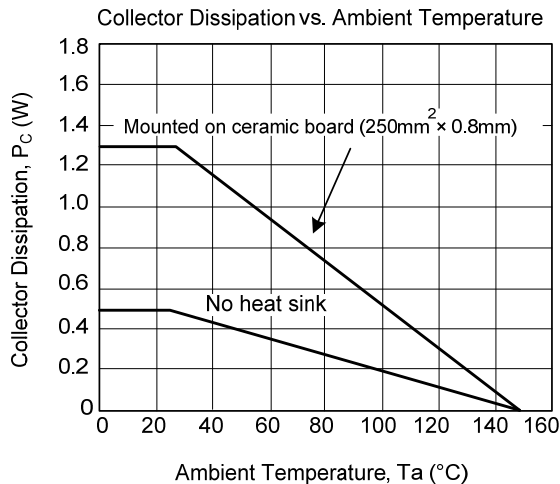
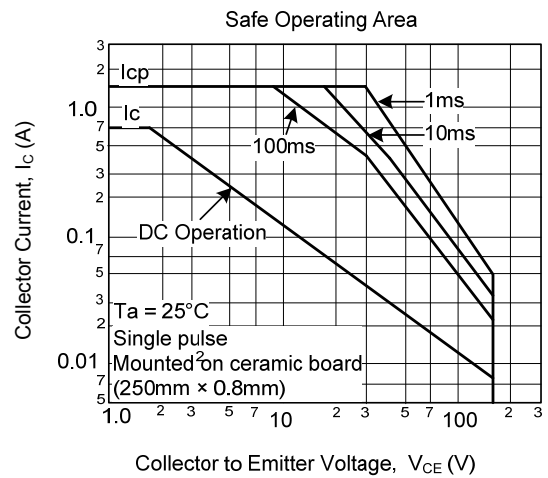
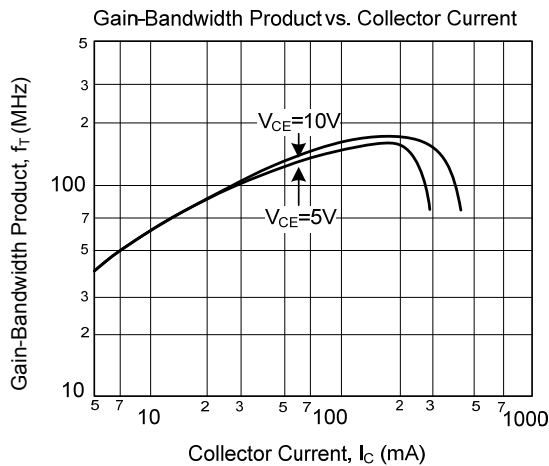


$$20I_{B1} = -20I_{B2} = I_C = 300\text{mA}$$

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS(Cont.)



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