



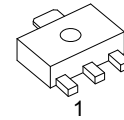
# 2SC3648

## 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
Normal	Lead Free	Halogen Free		1	2	3	
2SC3648-x-AB3-R	2SC3648L-x-AB3-R	2SC3648G-x-AB3-R	SOT-89	B	C	E	Tape Reel

<p>2SC3648L-x-AB3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Rank</p> <p>(4) Lead Free</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, L: Lead Free Plating, Blank: Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATING (Ta = 25°C)

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	°C
Storage Temperature	$T_{STG}$	-40 ~ +150	°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.

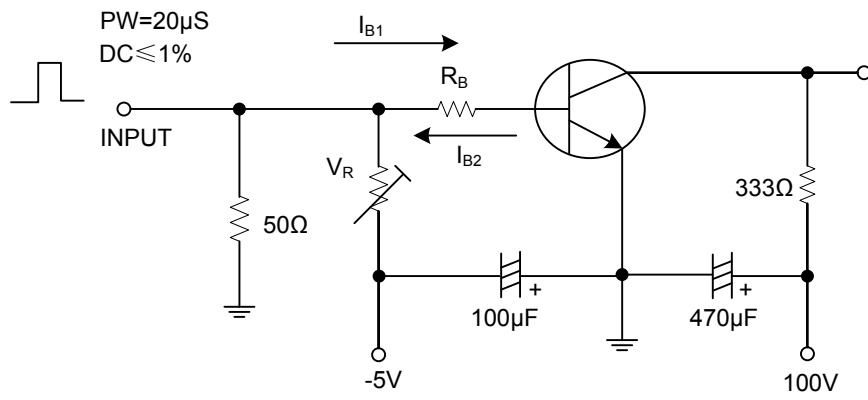
■ ELECTRICAL CHARACTERISTICS (Ta= 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 10\mu A, I_E = 0$	180			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 1, R_{BE} = \infty$	160			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 10\mu A, I_C = 0$	6			V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 120V, I_E = 0$			0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 4V, I_C = 0$			0.1	$\mu A$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 250mA, I_B = 25mA$		0.12	0.4	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 250mA, I_B = 25mA$		0.85	1.2	V
Output Capacitance	$C_{ob}$	$V_{CB} = 10V, f = 1MHz$		8		pF
DC Current Gain	$h_{FE1}$	$V_{CE} = 5V, I_C = 100mA$	100		400	
	$h_{FE2}$	$V_{CE} = 5V, I_C = 10mA$	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	$f_T$	$V_{CE} = 5V, I_C = 50mA$		120		MHz

■ CLASSIFICATION OF  $h_{FE1}$

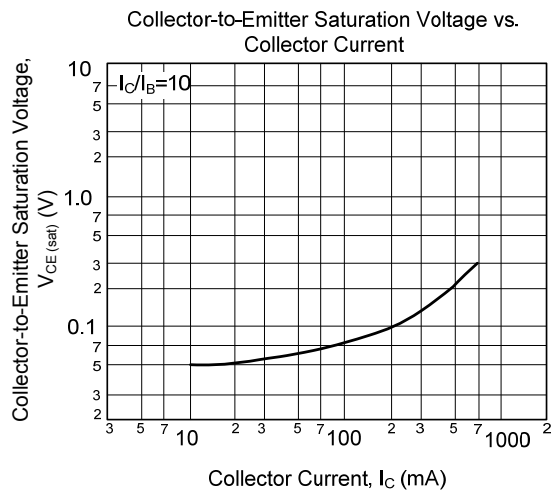
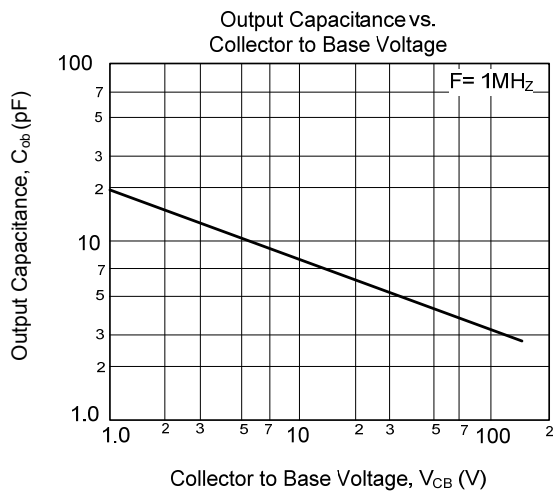
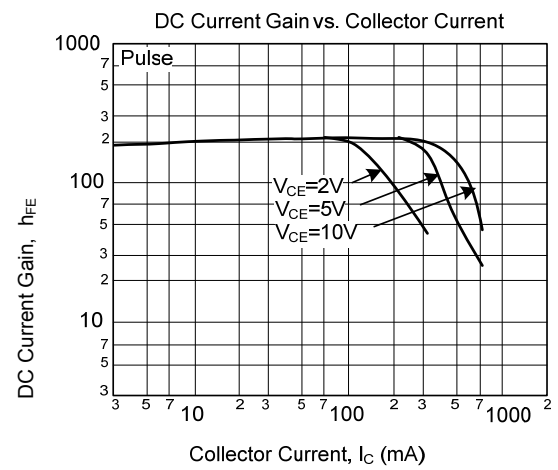
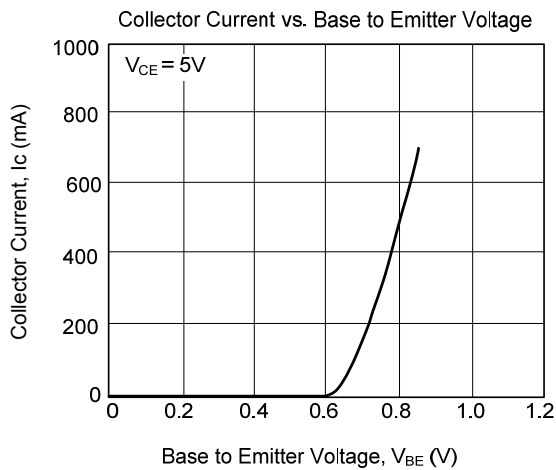
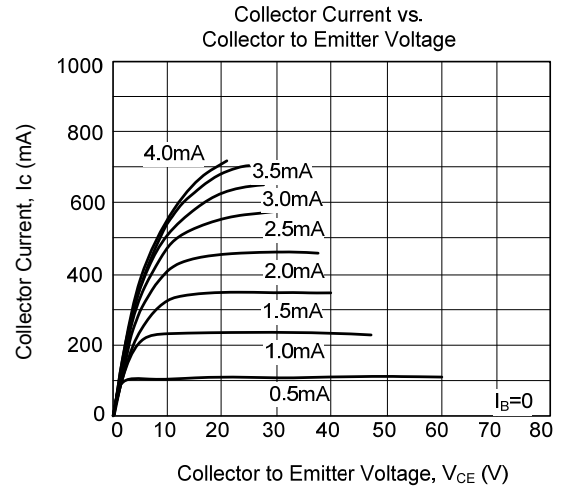
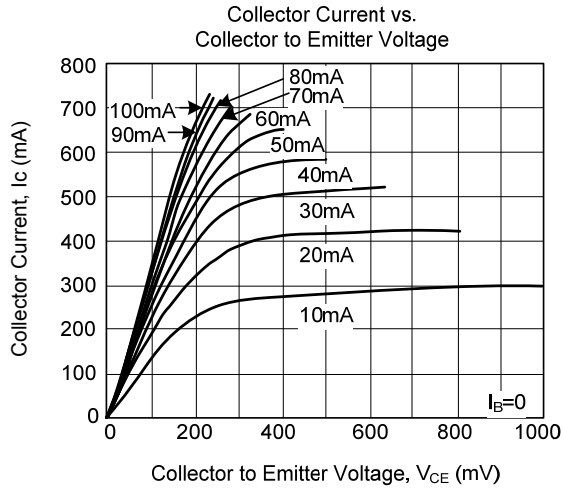
RANK	R	S	T
RANGE	100 ~ 200	140 ~ 280	200 ~ 400

## SWITCHING TIME TEST CIRCUIT

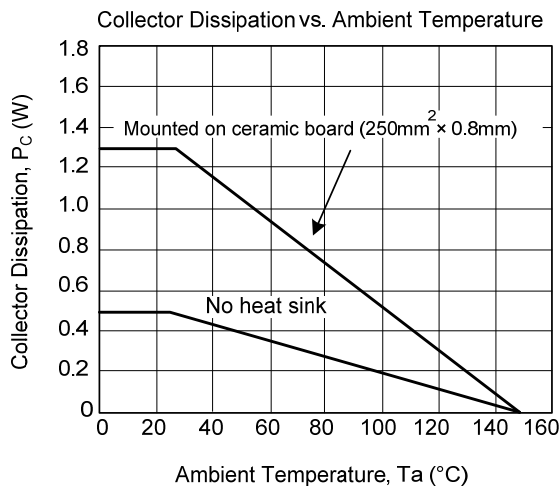
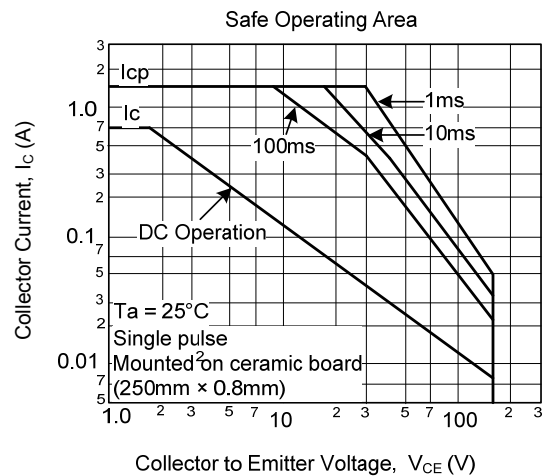
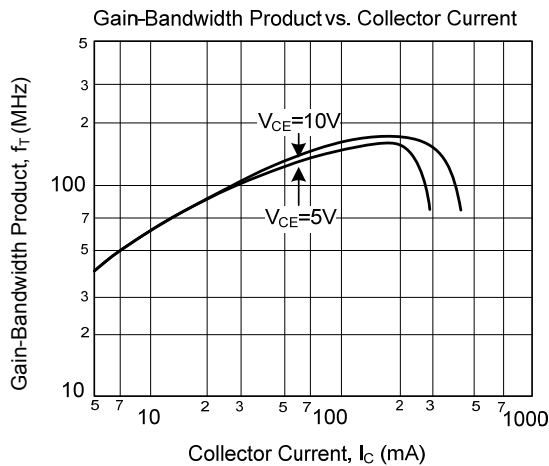


$$20I_{B1} = -20I_{B2} = I_C = 300\text{mA}$$

## ■ TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS(Cont.)



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