

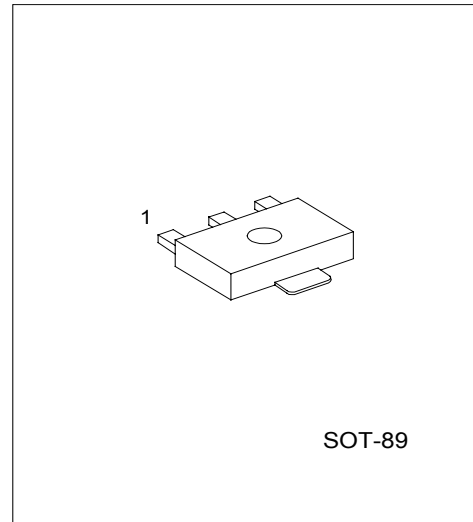


## **2SC3648      NPN EPITAXIAL SILICON TRANSISTOR**

### **HIGH-VOLTAGE SWITCHING PREDRIVER APPLICATIONS**

#### ■ **FEATURES**

- \* High breakdown voltage and large current capacity
- \* Fast switching speed
- \* Over Current Protection Function



\*Pb-free plating product number: 2SC3648L

#### ■ **PIN CONFIGURATION**

PIN NO.	PIN NAME
1	Emitter
2	Collector
3	Base

#### ■ **ORDERING INFORMATION**

Order Number		Package	Packing
Normal	Lead free		
2SC3648-AB3-R	2SC3648L-AB3-R	SOT-89	Tape Reel

### ■ ABSOLUTE MAXIMUM RATINGS (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	$P_C$ (Mounted on ceramic board 250mm <sup>2</sup> × 0.8mm)	1.3	W
	$P_C$	500	mW
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{STG}$	-40 ~ +150	°C

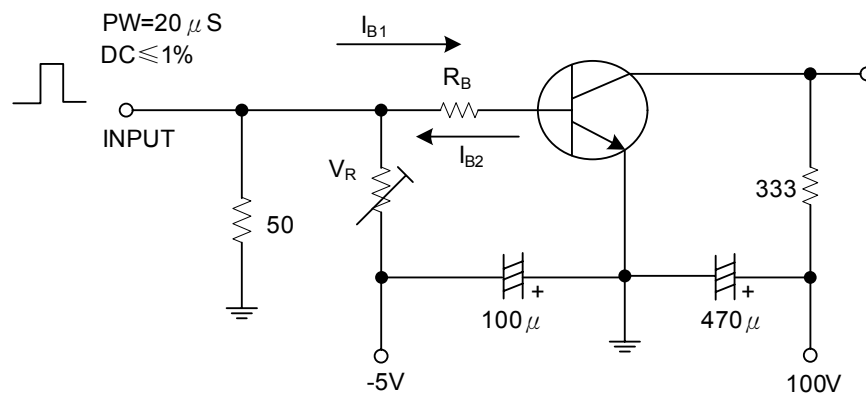
### ■ ELECTRICAL CHARACTERISTICS (Ta = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 250mA, I_B = 25mA$		0.12	0.4	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 250mA, I_B = 25mA$		0.85	1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	180			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1, R_{BE} = \infty$	160			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu A, I_C = 0$	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	$\mu A$
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 $h_{FE} 1$

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

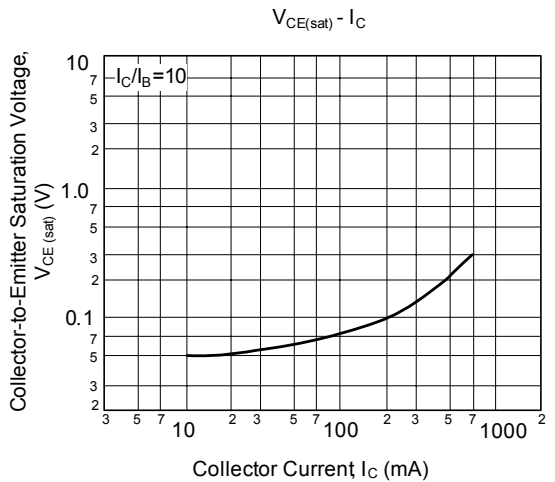
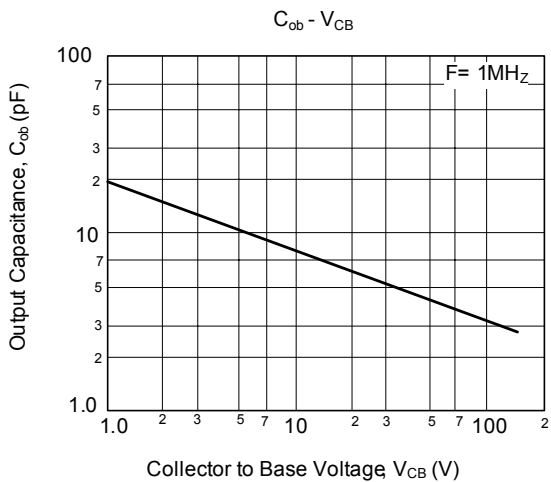
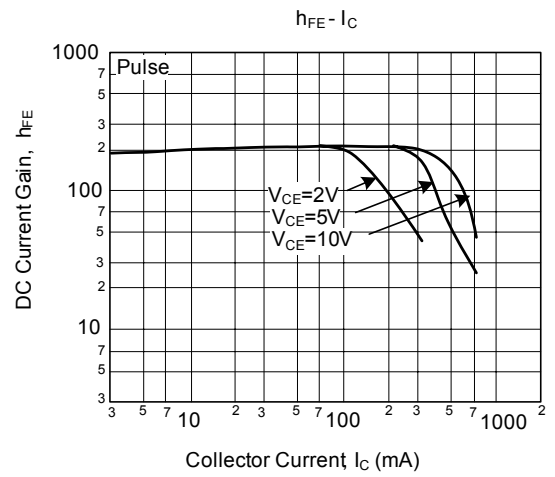
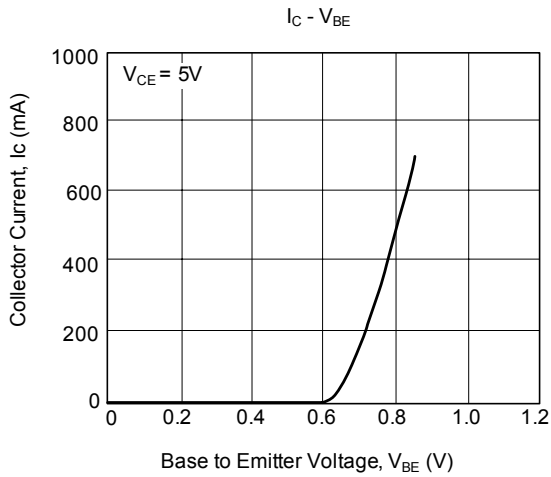
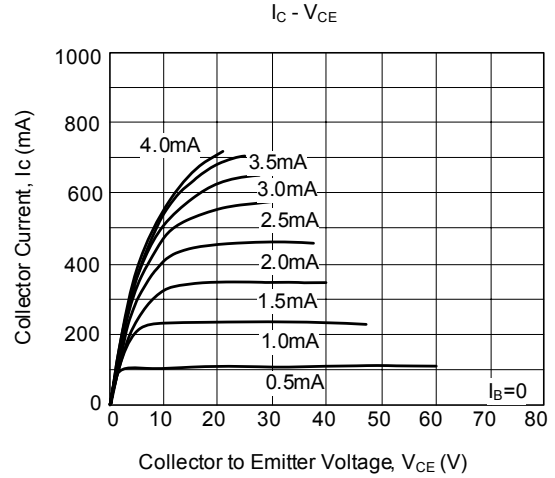
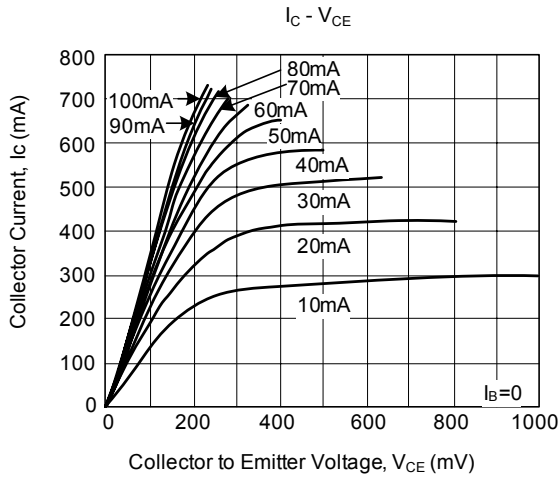
### ■ SWITCHING TIME TEST CIRCUIT



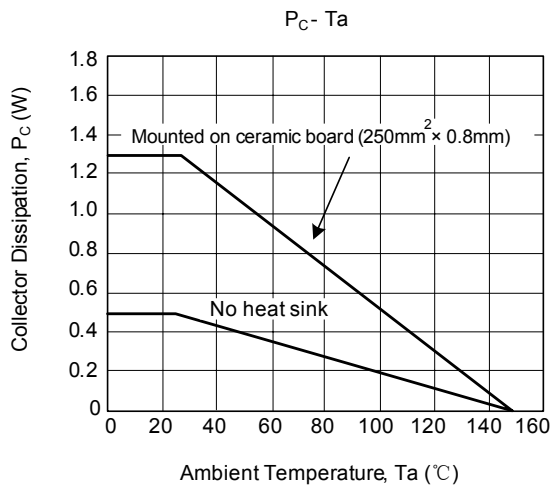
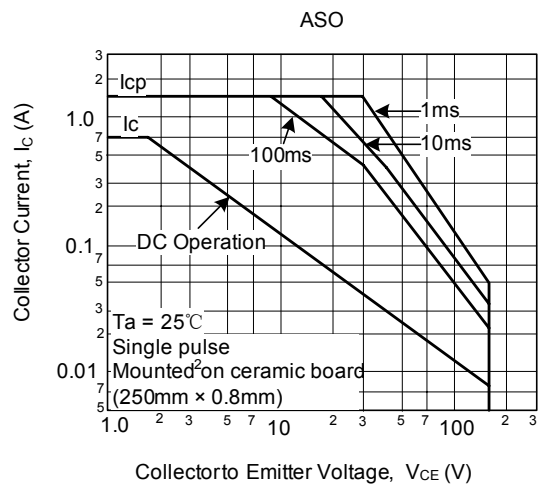
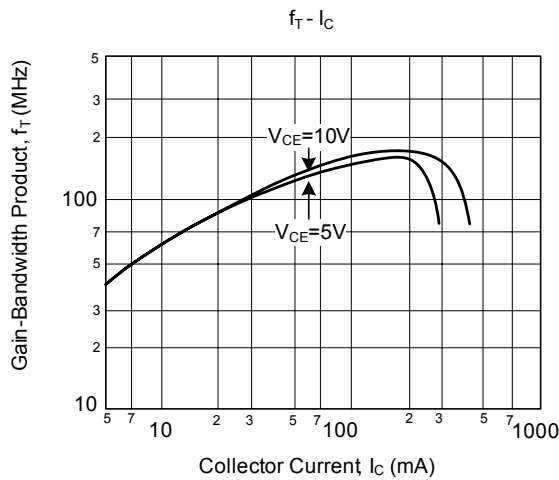
$$20I_{B1} = -20I_{B2} = I_C = 300mA$$

Unit (Resistance:  $\Omega$ , Capacitance: F)

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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