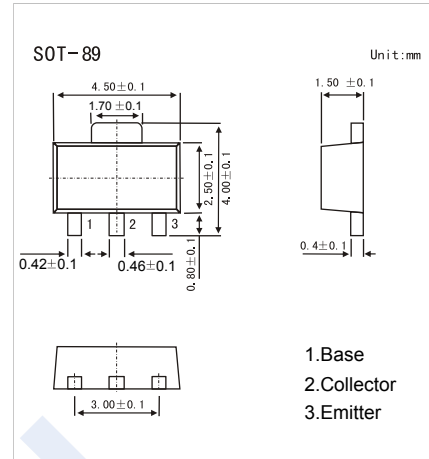


NPN Transistors

2SC3648-HF

■ Features

- High breakdown voltage and large current capacity.
- Fast switching speed.
- Complementary to 2SA1418-HF
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	180	V
Collector - Emitter Voltage	V_{CEO}	160	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	0.7	A
Peak Collector Current	I_{CM}	1.5	
Collector Power Dissipation	P_C	500	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V_{CBO}	$I_C = 100 \mu\text{A}$, $I_E = 0$	180			V
Collector-emitter breakdown voltage	V_{CEO}	$I_C = 1 \text{ mA}$, $R_{BE} = \infty$	160			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu\text{A}$, $I_C = 0$	6			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 120 \text{ V}$, $I_E = 0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 4 \text{ V}$, $I_C = 0$			0.1	
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	
DC current gain	h_{FE}	$V_{CE} = 5 \text{ V}$, $I_C = 100 \text{ mA}$	100		400	
		$V_{CE} = 5 \text{ V}$, $I_C = 10 \text{ mA}$	90			
Turn-ON Time	t_{on}	See specified Test Circuit.		50		ns
Storage Time	t_{stg}			1000		
Fall Time	t_f			60		
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$		8		μF
Transition frequency	f_T	$V_{CE} = 10 \text{ V}$, $I_C = 50 \text{ mA}$		120		MHz

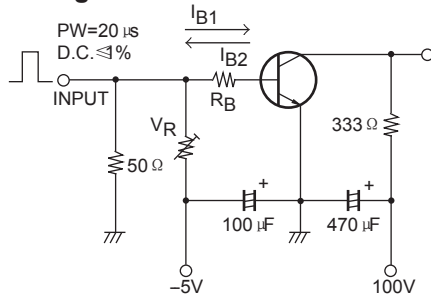
■ Classification of h_{fe} (1)

Type	2SC3648-R-HF	2SC3648-R-HF	2SC3648-T-HF
Range	100-200	140-280	200-400
Marking	CDR _F	CDS _F	CDT _F

NPN Transistors

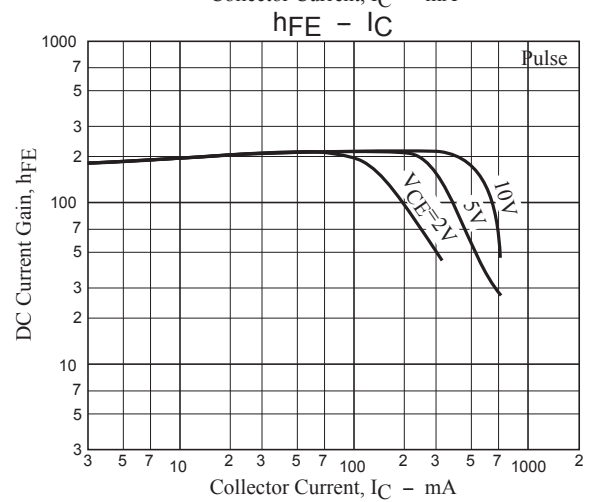
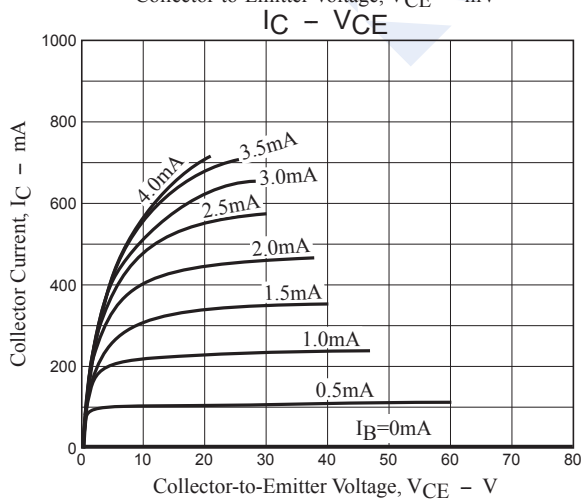
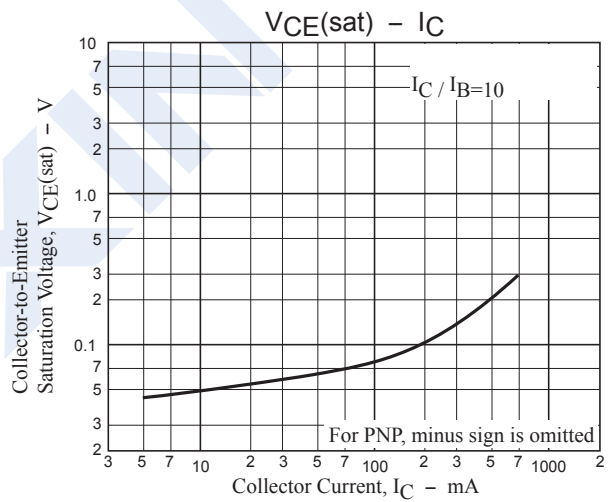
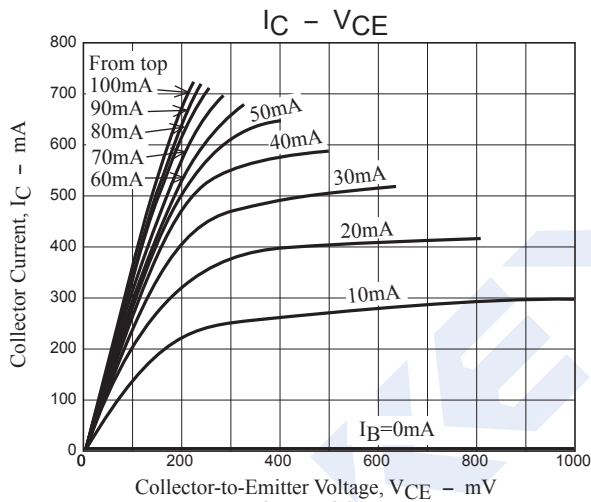
2SC3648-HF

Switching Time Test Circuit



$I_C = 20I_{B1} = -20I_{B2} = 300\text{mA}$
 (For PNP, the polarity is reversed)

Typical Characteristics



NPN Transistors

2SC3648-HF

■ Typical Characteristics

