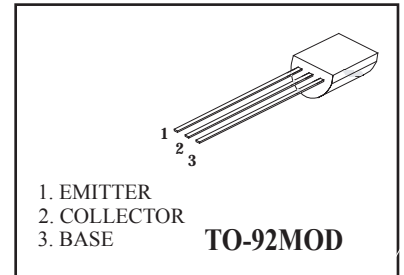
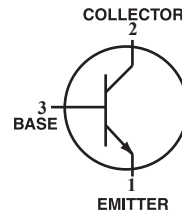


### NPN General Purpose Transistors

**(Pb)** Lead(Pb)-Free



#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	25 50	Vdc
Collector-Base Voltage	$V_{CBO}$	30 60	Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current-Continuous	$I_C$	1.0	Adc
<b>Peak Collector Current</b>	<b><math>I_{cp}(DC)</math></b>	<b>1.5</b>	<b>Adc</b>

#### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation Alumina Substrate, (1) $T_A=25^\circ C$ Derate above $25^\circ C$	$P_D$	1.0 8.0	mW mW/ $^\circ C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	$^\circ C/W$
Junction and Storage, Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ C$

#### DEVICE MARKING

**2SC1383=2SC1383, 2SC1384=2SC1384**

#### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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#### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C=2.0\text{mAdc}, I_B=0$ )	2SC1383 2SC1384	$V_{(BR)CEO}$	25 50	-	Vdc
Collector-Base Breakdown Voltage ( $I_C=10\ \mu\text{Adc}, I_E=0$ )	2SC1383 2SC1384	$V_{(BR)CBO}$	30 60	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E=10\ \mu\text{Adc}, I_C=0$ )		$V_{(BR)EBO}$	5.0	-	Vdc
Collector Cutoff Current ( $V_{CB}=20\text{Vdc}, I_E=0$ )		$I_{CBO}$	-	0.1	$\mu\text{Adc}$

1. Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Max	Unit
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**ON CHARACTERISTICS**

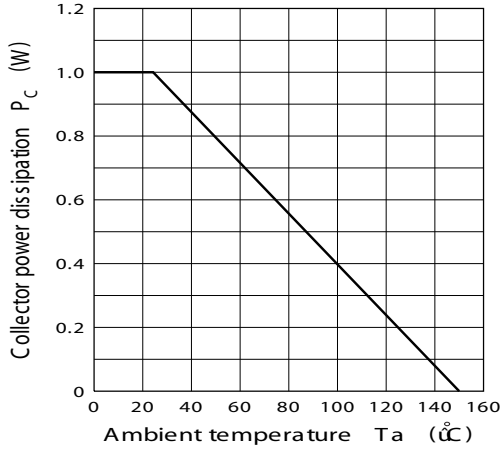
DC Current Gain ( $I_C=500\text{ mA dc}, V_{CE}=10\text{ V dc}$ ) ( $I_C=1.0\text{ A dc}, V_{CE}=5.0\text{ V dc}$ )	$h_{FE}^{(1)}$ $h_{FE}^{(2)}$	85 50	340 -	- -
Collector-Emitter Saturation Voltage ( $I_C=500\text{ mA dc}, I_B=50\text{ mA dc}$ )	$V_{CE(sat)}$	-	0.4	Vdc
Base-Emitter Saturation Voltage ( $I_C=500\text{ mA dc}, I_B=50\text{ mA dc}$ )	$V_{BE(sat)}$	-	1.2	Vdc

**SMALL-SIGNAL CHARACTERISTICS**

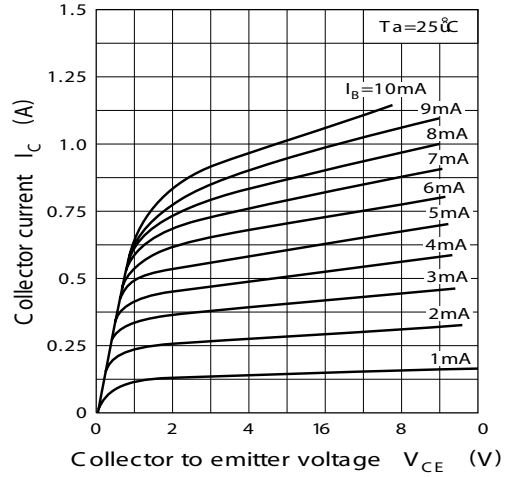
Current-Gain-Bandwidth Product ( $I_C=50\text{ mA dc}, V_{CE}=10\text{ V dc}, f=30\text{ MHz}$ )	$f_T$	100	-	MHz
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**CLASSIFICATION OF  $h_{FE}$** 

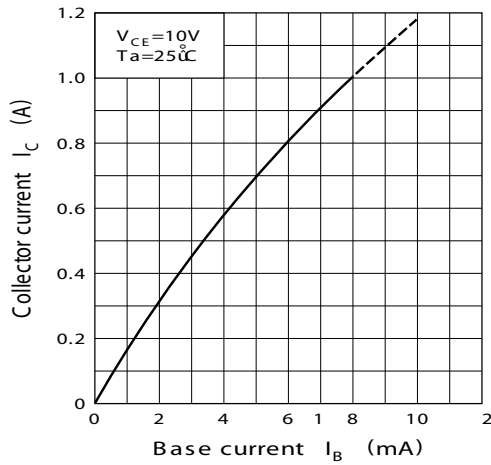
Rank	Q	R	H
Range	85-170	120-240	170-340



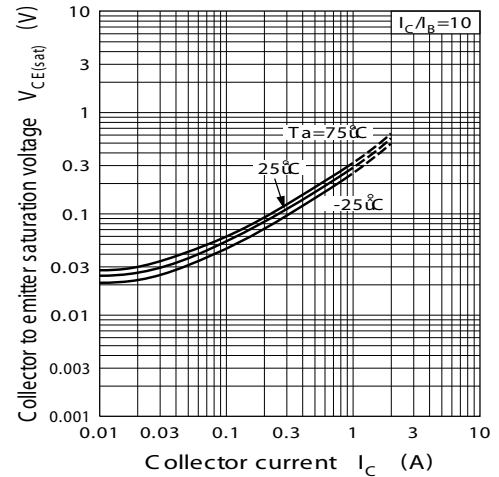
**FIG1. Total Power Dissipation Vs Ambient Temperature**



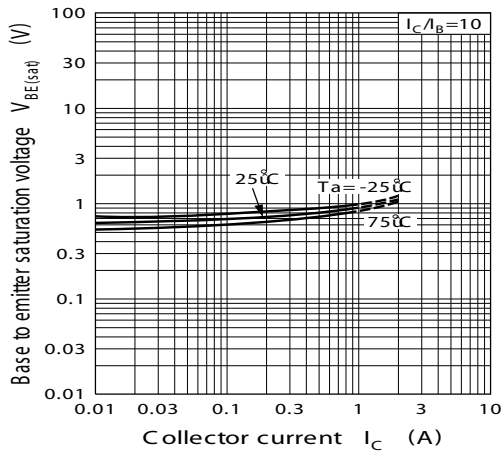
**FIG2. Static Characteristic**



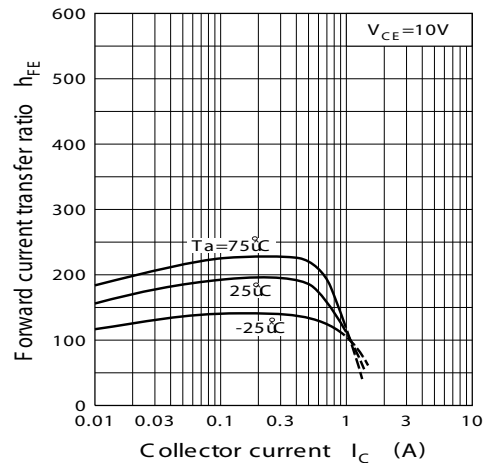
**FIG3. Collect Current Vs Base Current**



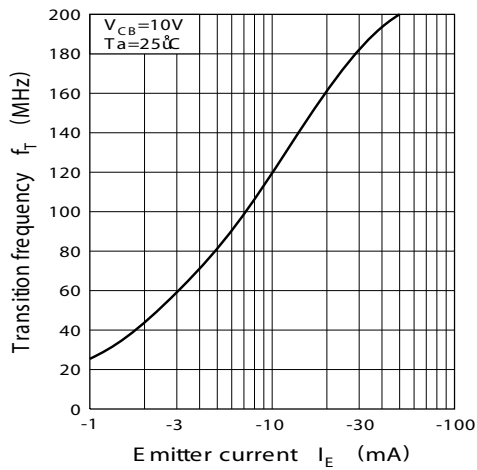
**FIG4. Collector-Emitter Saturation Voltage**



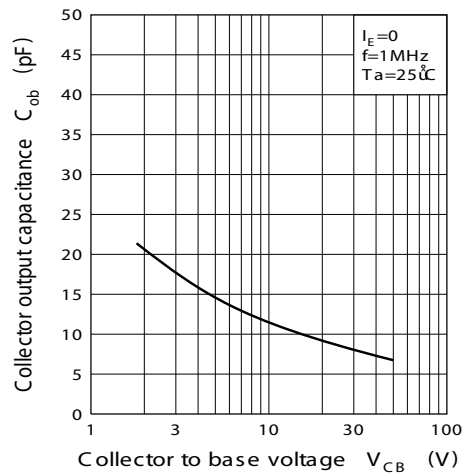
**FIG 5. Base-Emitter Saturation Voltage**



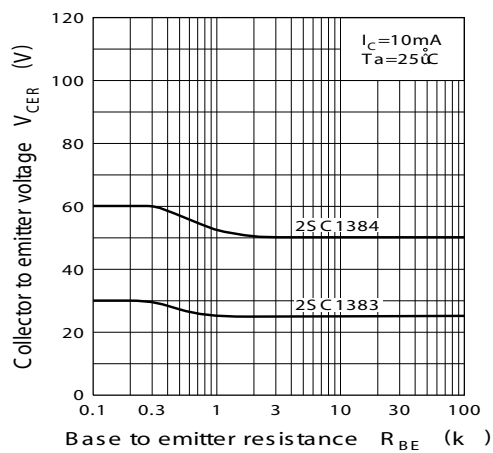
**FIG6. Current Gain Bandwidth Product**



**FIG7. Current-Gain-Bandwidth**



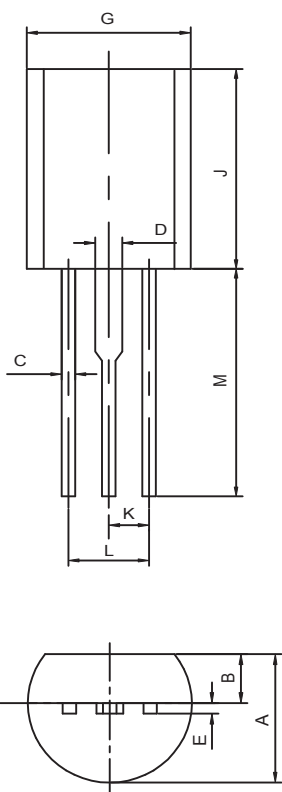
**FIG9. Capacitance**



**FIG9.  $V_{CER}$  VS  $R_{BE}$**

## TO-92MOD Outline Dimensions

unit:mm



TO-92MOD		
Dim	Min	Max
A	4.700	5.100
B	1.730	2.030
C	0.400	0.600
D	0.900	1.100
E	0.400	0.500
G	5.800	6.200
J	8.400	8.800
K	1.500TYP	
L	2.900	3.100
M	12.20	13.450