

RoHS Compliant Product

**Features**

Power dissipation

$P_{CM} : 0.5 \text{ W (Tamb= 25°C)}$

Collector current

$I_{CM} : 1 \text{ A}$

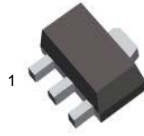
Collector-base voltage

$V_{(BR)CBO} : 40 \text{ V}$

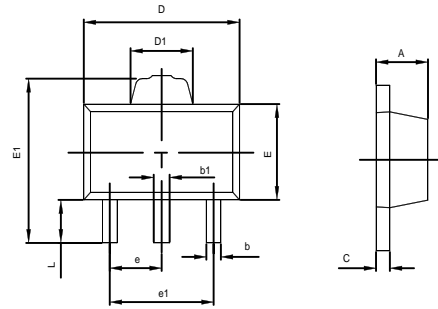
Operating & Storage junction Temperature

$T_j, T_{stg} : -55\text{°C} \sim +150\text{°C}$

**SOT-89**



- 1.BASE
- 2.COLLECTOR
- 3.EMITTER



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

**Electrical Characteristics( Tamb=25°C unless otherwise specified)**

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C= 50 \mu \text{ A}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C= 1\text{mA}, I_B=0$	32			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E= 50 \mu \text{ A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}= 20 \text{ V}, I_E=0$			0.5	$\mu \text{ A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}= 4\text{V}, I_C=0$			0.5	$\mu \text{ A}$
DC current gain	$h_{FE}$	$V_{CE}= 3\text{V}, I_C= 0.1\text{A}$	82		390	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C= 500\text{mA}, I_B= 50\text{mA}$			0.4	V
Transition frequency	$f_T$	$V_{CE}= 5\text{V}, I_C= 50\text{mA}$ $f=1\text{MHz}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB}= 10\text{V}, I_E= 0$ $f=1\text{MHz}$		15		pF

**Classification of hFE**

Rank	P	Q	R
Range	82-180	120-270	180-390
Marking	DAP	DAQ	DAR

**ELECTRICAL CHARACTERISTIC CURVES**

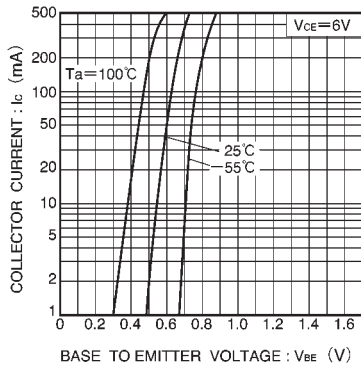


Fig.1 Grounded emitter propagation characteristics

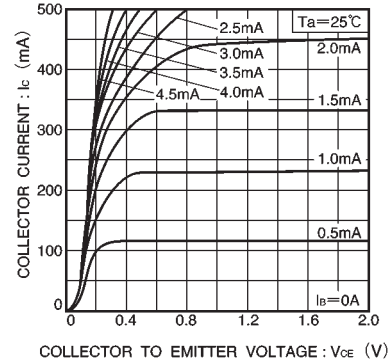


Fig.2 Grounded emitter output characteristics

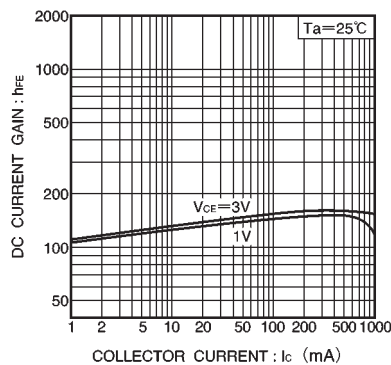


Fig.3 DC current gain vs. collector current ( I )

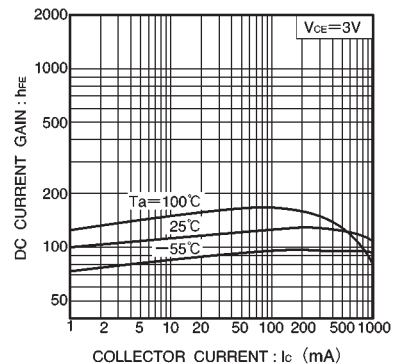


Fig.4 DC current gain vs. collector current ( II )

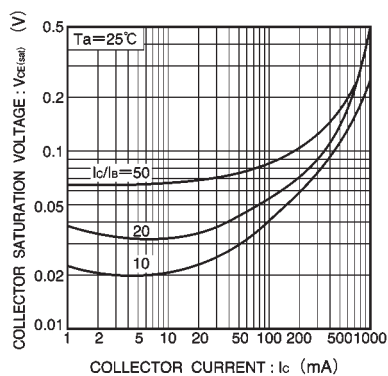


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

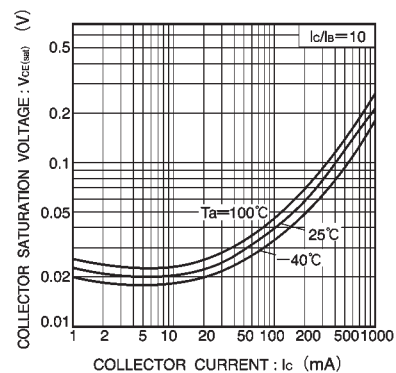


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

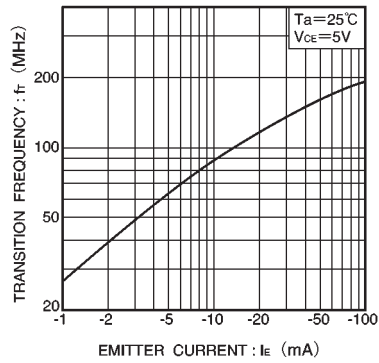


Fig.7 Gain bandwidth product vs. emitter current

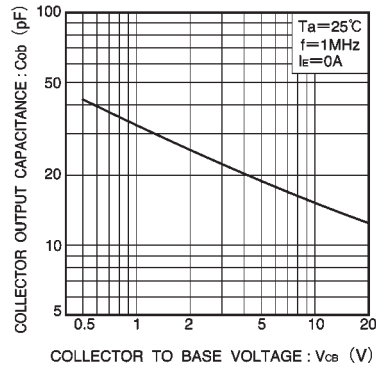


Fig.8 Collector output capacitance vs. collector-base voltage

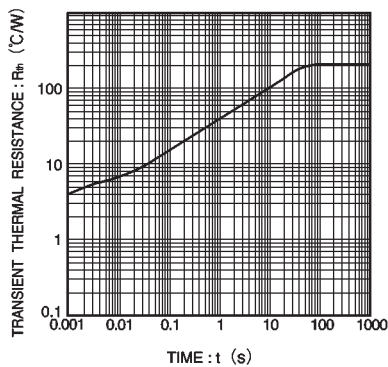


Fig.10 Transient thermal resistance (2SD1664)

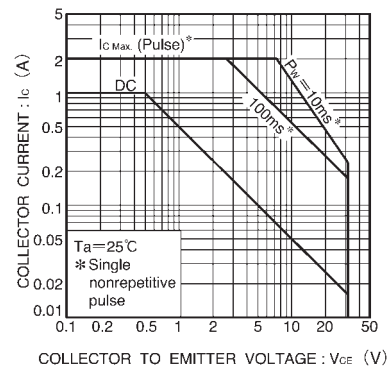


Fig.9 Safe operating area (2SD1664)