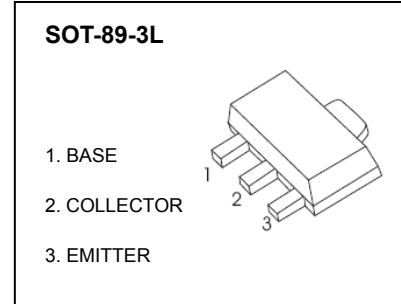


### PNP -5.0A -30V Middle Power Transistor

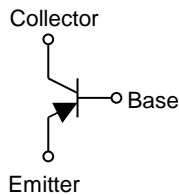
Parameter	Value
$V_{CEO}$	-30V
$I_C$	-5.0A

#### ●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary NPN Types : 2SCR542P
- 3) Low  $V_{CE(sat)}$   
 $V_{CE(sat)} = -0.4V$  Max. ( $I_C/I_B = -2A / -100mA$ )
- 4) Lead Free/RoHS Compliant.



#### ●Inner circuit



#### ●Applications

Motor driver , LED driver  
Power supply

#### ●Marking : MQ

#### ●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	Unit
Collector-base voltage		$V_{CBO}$	-30	V
Collector-emitter voltage		$V_{CEO}$	-30	V
Emitter-base voltage		$V_{EBO}$	-6	V
Collector current	DC	$I_C$	-5.0	A
	Pulsed	$I_{CP}^{*1}$	-10	A
Power dissipation	2SAR542P	$P_D$	0.5 <sup>*2</sup>	W
			2.0 <sup>*3</sup>	W
Junction temperature		$T_j$	150	°C
Range of storage temperature		$T_{stg}$	-55 to +150	°C

\*1  $P_w=10ms$  , single pulse \*2 Each terminal mounted on a reference land

\*3 Mounted on a ceramic board (40x40x0.7mm)

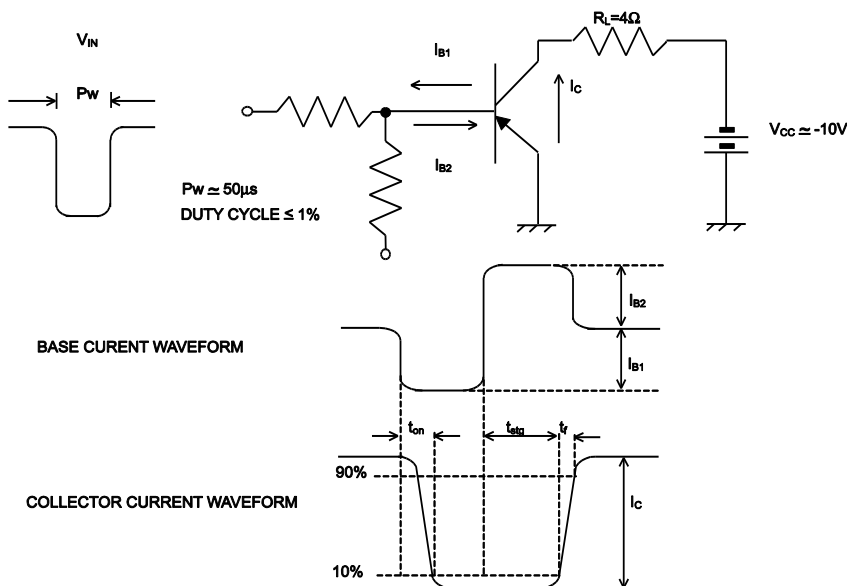
● **Electrical characteristics**( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = -1\text{mA}$	-30	-	-	V
Collector-base breakdown voltage	$BV_{CBO}$	$I_C = -100\mu\text{A}$	-30	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = -100\mu\text{A}$	-6	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -30\text{V}$	-	-	-1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -4\text{V}$	-	-	-1	$\mu\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	$I_C = -2\text{A}, I_B = -100\text{mA}$	-	-0.20	-0.40	V
DC current gain	$h_{FE}$	$V_{CE} = -2\text{V}, I_C = -500\text{mA}$	200	-	500	-
Transition frequency	$f_T$	$V_{CE} = -10\text{V}, I_E = 100\text{mA}$ $f = 100\text{MHz}$	-	240	-	MHz
Output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0\text{A}$ , $f = 1\text{MHz}$	-	40	-	pF
Turn-on time	$t_{on}^{*2}$	$I_C = -2.5\text{A}$ $I_{B1} = -250\text{mA}$ $I_{B2} = 250\text{mA}$ $V_{CC} \approx -10\text{V}$	-	45	-	ns
Storage time	$t_{stg}^{*2}$		-	200	-	ns
Fall time	$t_f^{*2}$		-	25	-	ns

\*1 Pulsed

\*2 See switching time test circuit

● **Switching time test circuit**



● **Electrical characteristic curves** ( $T_a = 25^\circ\text{C}$ )

Fig.1 Ground Emitter Propagation Characteristics

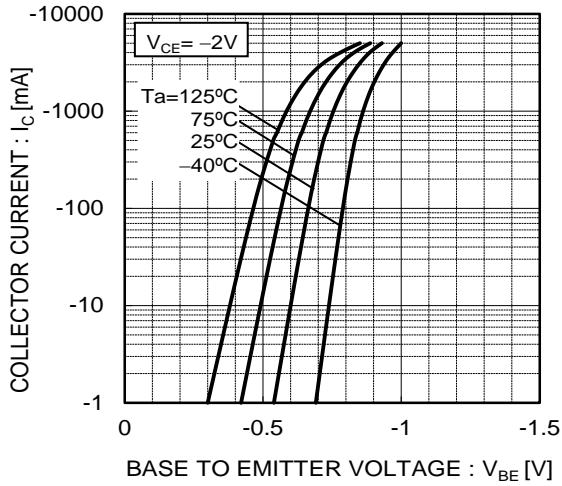


Fig.2 Typical Output Characteristics

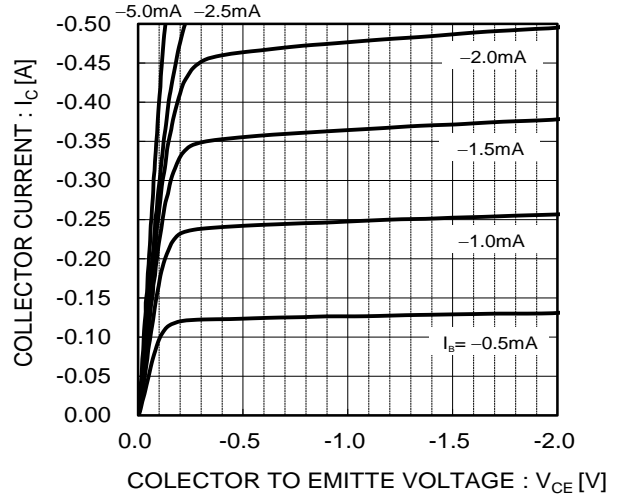


Fig.3 Gain Bandwidth Product vs. Emitter Current

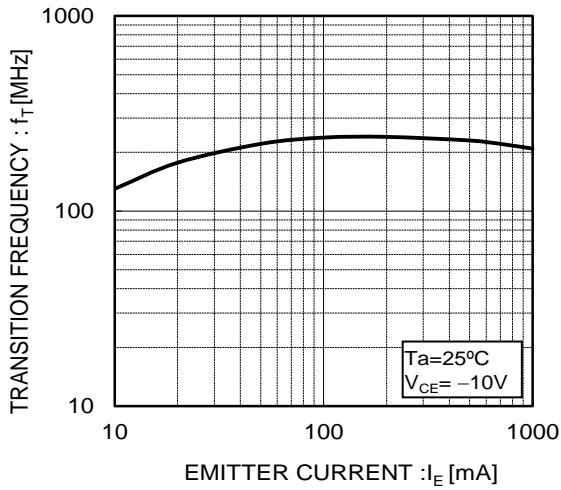


Fig.4 DC current gain vs. output current (II)

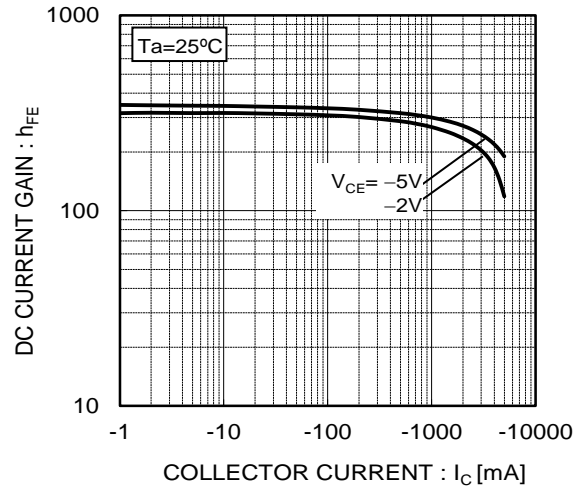


Fig.5 Safe Operating Area

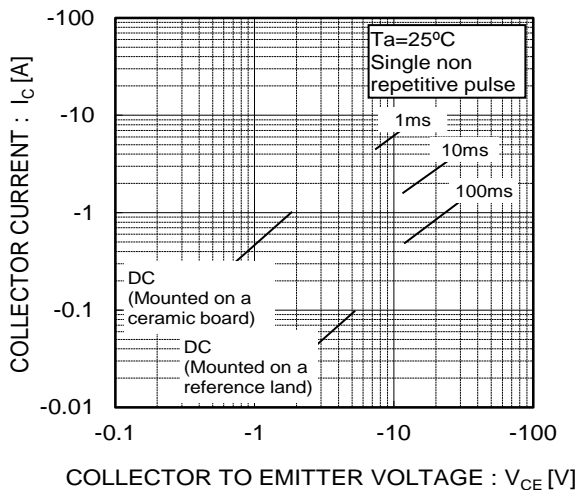
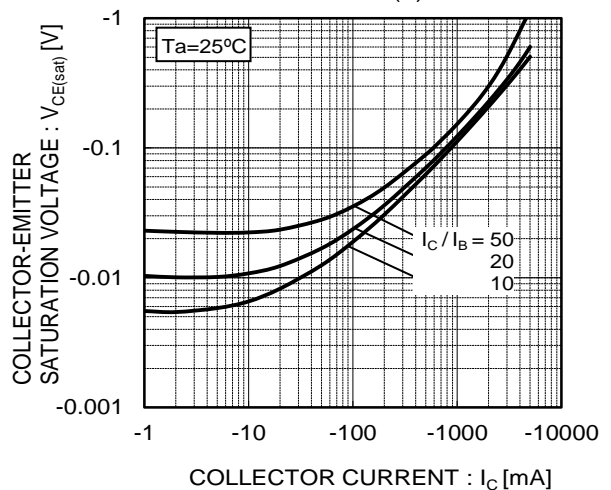
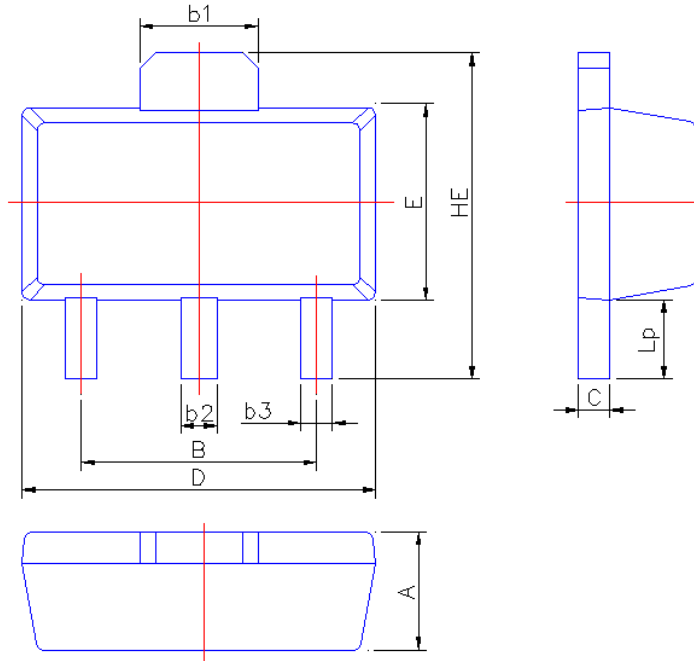


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)



### SOT-89 PACKAGE OUTLINE



Symbol	Dimension in Millimeters	
	Min	Max
A	1.40	1.60
B	2.95	3.05
b1	1.45	1.70
b2	0.45	0.56
b3	0.35	0.50
C	0.35	0.50
D	4.40	4.60
E	2.35	2.55
HE	3.90	4.40
Lp	0.90	1.10