



**CHENMKO ENTERPRISE CO.,LTD**

*Lead free devices*

**SMALL FLAT  
NPN Epitaxial Transistor**

VOLTAGE 20 Volts CURRENT 5 Amperes

**2SD2098PT**

**APPLICATION**

\* Power driver and Strobe Flash .

**FEATURE**

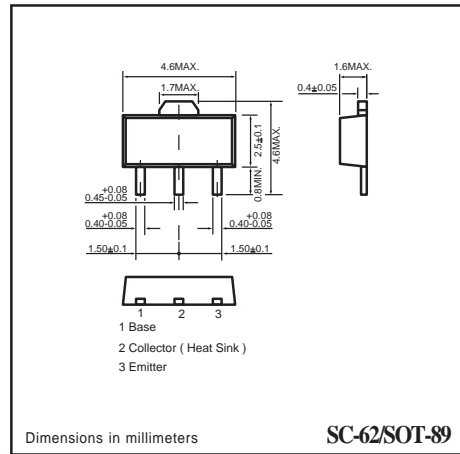
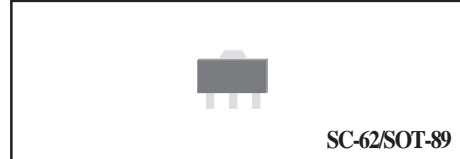
- \* Small flat package. (SC-62/SOT-89)
- \* Low saturation voltage  $V_{CE(sat)}=0.25V(Typ.)(I_C/I_B=4A/0.1A)$
- \* High speed switching time:  $t_{stg}=1.0\mu Sec (typ.)$
- \*  $PC=2.0W$  (mounted on ceramic substrate).
- \* High saturation current capability.

**CONSTRUCTION**

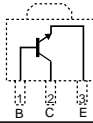
\* NPN Silicon Transistor

**MARKING**

\* hFE Classification Q: Q98  
R: R98



**CIRCUIT**



**MAXIMUM RATINGS** ( At  $T_A = 25^\circ C$  unless otherwise noted )

RATINGS	CONDITION	SYMBOL	MIN.	MAX.	UNITS
Collector - Base Voltage	Open Emitter	$V_{CB0}$	-	50	Volts
Collector - Emitter Voltage	Open Base	$V_{CE0}$	-	20	Volts
Emitter - Base Voltage	Open Collector	$V_{EB0}$	-	6	Volts
Collector Current DC		$I_C$	-	5	Amps
Peak Collector Current		$I_{CM}$	-	10	Amps
Peak Base Current		$I_{BM}$	-	0.5	Amps
Total Power Dissipation	$T_A \leq 25^\circ C$ ; Note 1	$P_{TOT}$	-	2.0	W
Storage Temperature		$T_{STG}$	-55	+150	$^\circ C$
Junction Temperature		$T_J$	-	+150	$^\circ C$
Operating Ambient Temperature		$T_{AMB}$	-55	+150	$^\circ C$

**Note**

1. Transistor mounted on ceramic substrate by 40mmX40mmX0.7mm.
2. Measured at Pulse Width 300 us, Duty Cycle 2%.

2003-10

## RATING CHARACTERISTIC CURVES ( 2SD2098PT )

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

PARAMETERS	CONDITION	SYMBOL	MIN.	TYPE	MAX.	UNITS
Collector Cut-off Current	$I_E=0; V_{CB}=40\text{V}$	$I_{CBO}$	-	-	0.5	$\mu\text{A}$
Emitter Cut-off Current	$I_C=0; V_{EB}=5\text{V}$	$I_{CEO}$	-	-	0.5	$\mu\text{A}$
DC Current Gain	$V_{CE}=2\text{V}$ ; Note 1 $I_C=0.5\text{A}$	$h_{FE}$	120	-	390	
Collector-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=0.1\text{A}$	$V_{CEsat}$	-	0.25	1.0	Volts
Base-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=0.1\text{A}$	$V_{BEsat}$	-	1.0	2.0	Volts
Collector Capacitance	$I_E=I_C=0; V_{CB}=20\text{V}$ ; $f=1\text{MHz}$	$C_C$	-	30	-	$\text{pF}$
Transition Frequency	$I_C=0.05\text{A}; V_{CE}=6.0\text{V}$ ; $f=100\text{MHz}$	$f_T$	-	150	-	$\text{MHz}$

**Note :**

1. Pulse test:  $t_p \leq 300\mu\text{Sec}$ ;  $\delta \leq 0.02$ .
2.  $h_{FE}(2)$  Classification Q: 120 to 270, R: 180 to 390.

## RATING CHARACTERISTIC CURVES ( 2SD2098PT )

Fig.1 Grounded emitter propagation characteristics

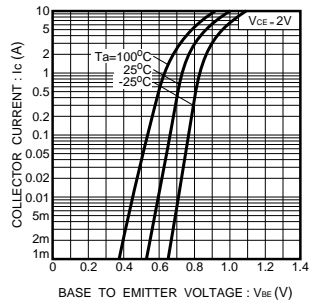


Fig.2 Grounded emitter output characteristics

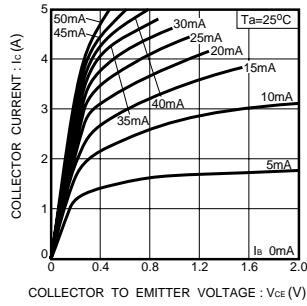


Fig.3 DC current gain vs. collector current ( I )

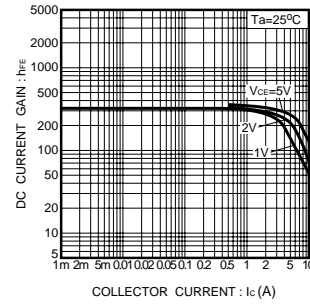


Fig.4 DC current gain vs. collector current ( II )

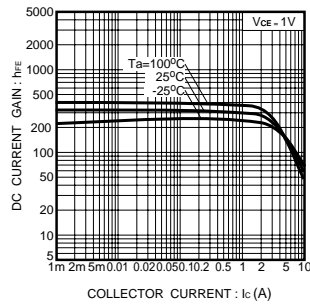


Fig.5 DC current gain vs. collector current ( III )

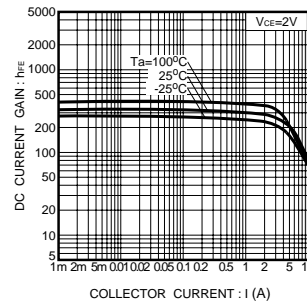


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

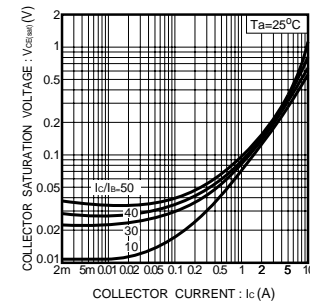


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

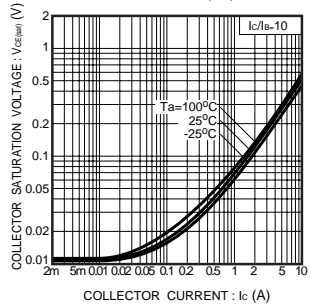


Fig.8 Collector-emitter saturation voltage vs. collector current ( III )

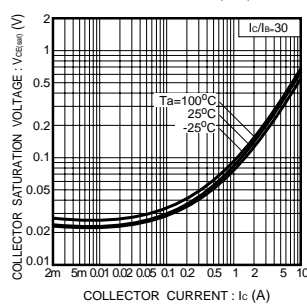
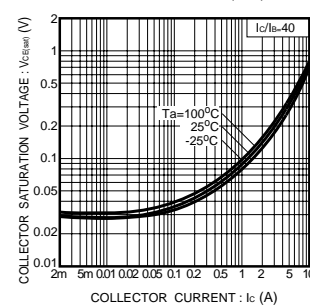


Fig.9 Collector-emitter saturation voltage vs. collector current ( IV )



## RATING CHARACTERISTIC CURVES ( 2SD2098PT )

Fig.10 Collector-emitter saturation voltage vs. collector current ( V )

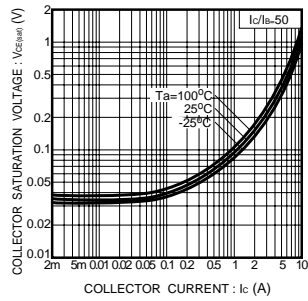


Fig.11 Gain bandwidth product vs. emitter current

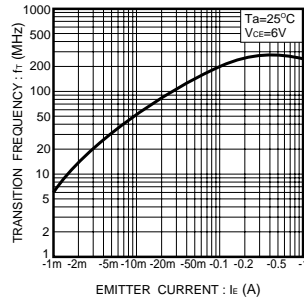


Fig.12 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

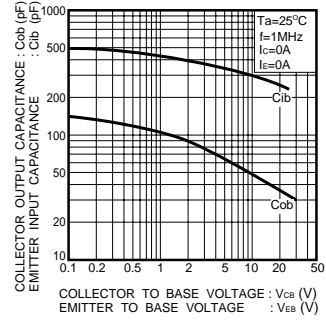


Fig.13 Safe operating area

