

Silicon NPN Power Transistors

2SC3089

DESCRIPTION

- With TO-3PN package
- High breakdown voltage ($V_{CBO} \geq 800V$)
- Fast switching speed
- Wide ASO (Safe Operating Area)

APPLICATIONS

- 500V/7A Switching Regulator Applications

PINNING

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

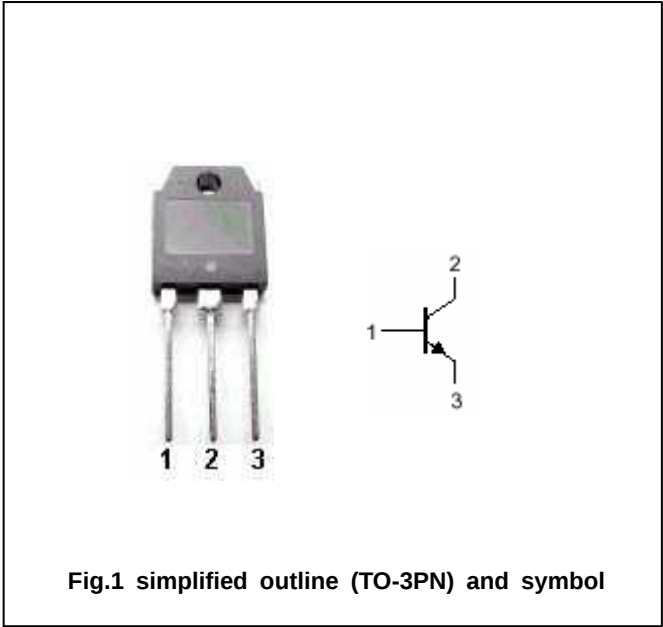


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings ($T_a=25^\circ C$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	Open emitter	800	V
V_{CEO}	Collector-emitter voltage	Open base	500	V
V_{EBO}	Emitter-base voltage	Open collector	7	V
I_C	Collector current		7	A
I_{CM}	Collector current-peak		14	A
I_B	Base current		3	A
P_C	Collector power dissipation	$T_a=25$	2.5	W
		$T_C=25$	80	
T_j	Junction temperature		150	
T_{stg}	Storage temperature		-55~150	

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CHARACTERISTICS

Tj=25 unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=5mA ; R_{BE}=\infty$	500			V
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=1mA ; I_E=0$	800			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=1mA ; I_C=0$	7			V
V_{CEsat}	Collector-emitter saturation voltage	$I_C=3A ; I_B=0.6A$			1.0	V
V_{BEsat}	Base-emitter saturation voltage	$I_C=3A ; I_B=0.6A$			1.5	V
I_{CBO}	Collector cut-off current	$V_{CB}=500V ; I_E=0$			10	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=5V ; I_C=0$			10	μA
h_{FE-1}	DC current gain	$I_C=0.6A ; V_{CE}=5V$	15		50	
h_{FE-2}	DC current gain	$I_C=3A ; V_{CE}=5V$	8			
C_{OB}	Output capacitance	$I_E=0 ; V_{CB}=10V ; f=1MHz$		80		pF
f_T	Transition frequency	$I_C=0.6A ; V_{CE}=10V$		18		MHz

Switching times

t_{on}	Turn-on time	$I_C=4A ; I_{B1}=-I_{B2}=0.8A$ $R_L=50\Omega ; V_{CC}=200V$			1.0	μs
t_s	Storage time				3.0	μs
t_f	Fall time				1.0	μs

◆ h_{FE-1} classifications

L	M	N
15-30	20-40	30-50

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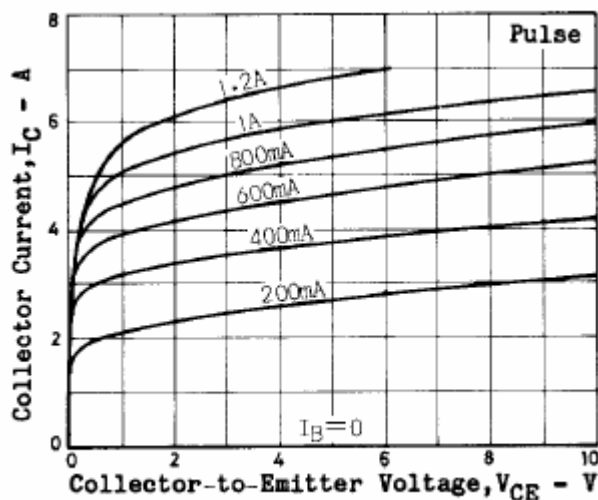


Fig.3 Static Characteristic

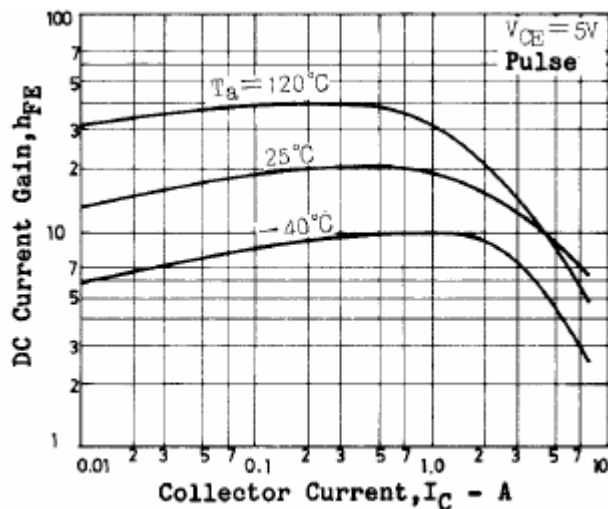


Fig.4 DC current Gain

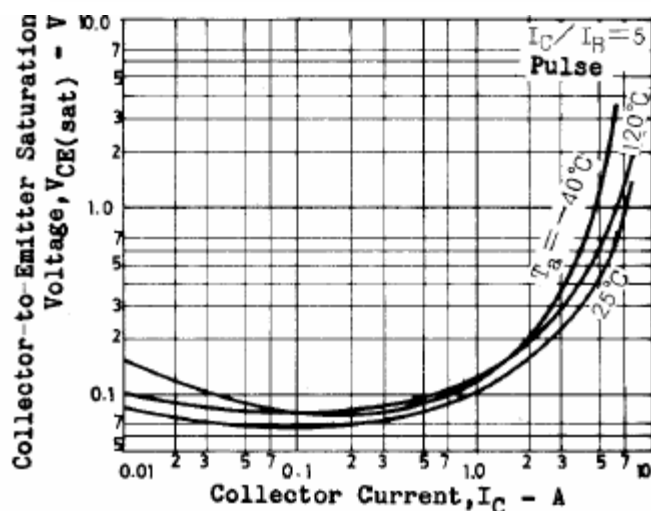


Fig.5 Collector-Emmitter Saturation Voltage

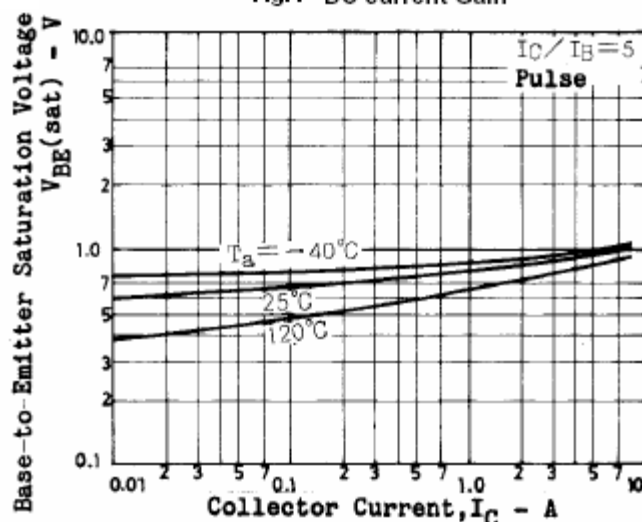


Fig.6 Base-Emmitter Saturation Voltage

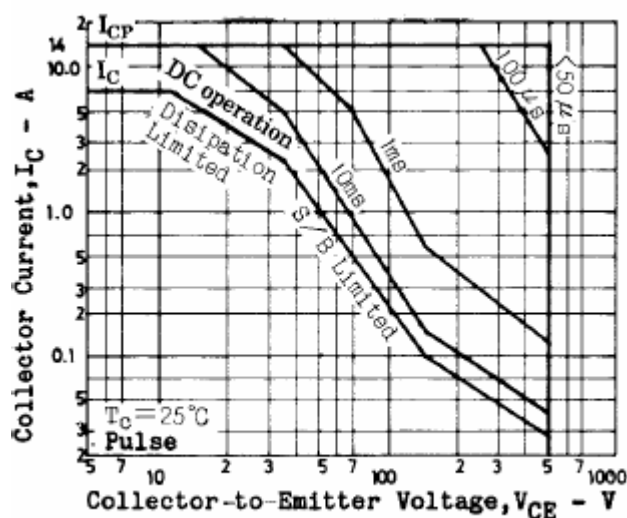


Fig.7 Safe Operating Area