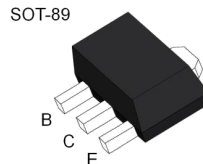


Applications

- Supply line switching
- Battery charger
- DC/DC converter
- LCD backlighting.

Features

- Low collector-to-emitter saturation voltage.
- High current capability
- Higher efficiency leading to less heat generation
- Reduced printed-circuit board requirements.
- Complement the PBSS5350X



Marking :

S46

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Value	Unit
Collector-base voltage		BV_{CBO}	-50	V
Collector-emitter voltage		BV_{CEO}	-50	V
Emitter-base voltage		BV_{EBO}	-5	V
Collector current (DC)		I_C	-3	A
Collector current (Pulse)		I_{CP}	-5	A
Base current (DC)		I_B	-0.5	A
Total power dissipation	Note1	P_{tot}	0.55	W
	Note2		1	
	Note3		1.4	
	Note4		1.6	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55~150	°C

Electrical Characteristics $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C = -100\mu\text{A}, I_E = 0$	-50			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -1\text{mA}, I_B = 0$	-50			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -100\mu\text{A}, I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -50\text{V}, I_E = 0$			-100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$			-100	nA
DC current gain	h_{FE}	$V_{CE} = -2\text{V}, I_B = -0.1\text{A}$	200			
		$V_{CE} = -2\text{V}, I_B = -0.5\text{A}$	200			
		$V_{CE} = -2\text{V}, I_B = -1\text{A}$	200		450	
		$V_{CE} = -2\text{V}, I_B = -2\text{A}$	130			
		$V_{CE} = -2\text{V}, I_B = -3\text{A}$	80			
Collector-emitter saturation voltage*	$V_{CE(sat)}$	$I_C = -500\text{mA}, I_B = -50\text{mA}$			-90	mV
		$I_C = -1\text{A}, I_B = -50\text{mA}$			-180	
		$I_C = -2\text{A}, I_B = -100\text{mA}$			-320	
		$I_C = -2\text{A}, I_B = -200\text{mA}$			-270	
		$I_C = -3\text{A}, I_B = -300\text{mA}$			-390	
Equivalent on-resistance	$R_{CE(sat)}$	$I_C = -2\text{A}, I_B = -200\text{mA}$			135	m Ω
Base -emitter saturation voltage*	$V_{BE(sat)}$	$I_C = -2\text{A}, I_B = -100\text{mA}$			-1.1	V
		$I_C = -3\text{A}, I_B = -300\text{mA}$			-1.2	
Base-emitter turn on voltage	$V_{BE(on)}$	$V_{CE} = -2\text{V}, I_B = -1\text{A}$			-1.1	V
Transition frequency	f_T	$V_{CE} = -10\text{V}, I_E = -100\text{mA}$ $f=100\text{MHz}$	100			MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f=1\text{MHz}$			35	pF

* Pulse Test: $PW=300\mu\text{s}$, duty Cycle=2% Pulsed

Thermal Characteristics

Parameter	Symbol	Conditions	Value	Unit
Thermal resistance from junction to ambient	$R_{th(j-a)}$	in free air; Note1	225	$^{\circ}\text{C} / \text{W}$
		Note2	125	
		Note3	90	
		Note4	80	
Thermal resistance from junction to soldering point	$R_{th(j-s)}$		16	$^{\circ}\text{C} / \text{W}$

Notes

1. Device mounted on a printed-circuit board, single sided copper, tinplated and standard footprint.
2. Device mounted on a printed-circuit board, single sided copper, tinplated and mounting pad for collector 1cm^2
3. Device mounted on a printed-circuit board, single sided copper, tinplated and mounting pad for collector 6cm^2
4. Device mounted on a ceramic printed-circuit board 7cm^2 , single-sided copper, tinplated.

RATING AND CHARACTERISTIC CURVES

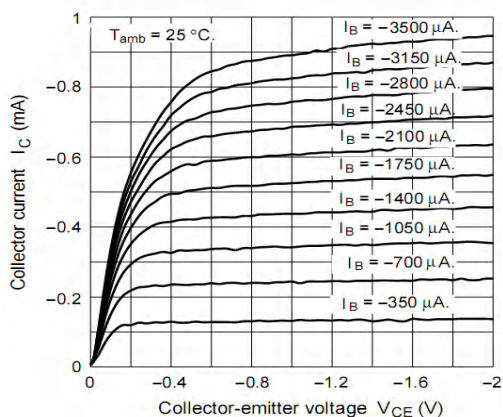


Figure 1. Static Characteristic

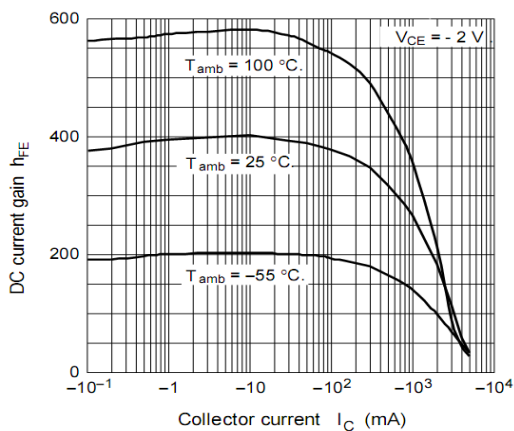


Figure 2. DC current Gain

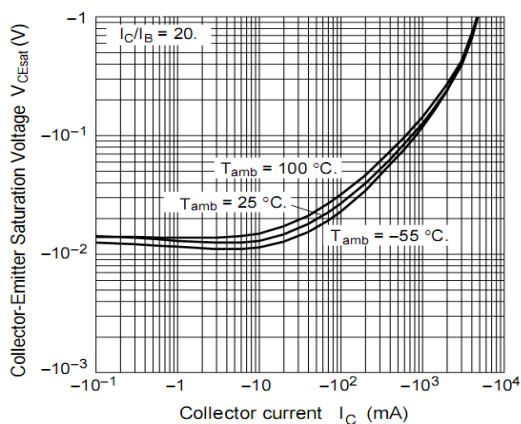


Figure 3. Collector-Emitter Saturation Voltage

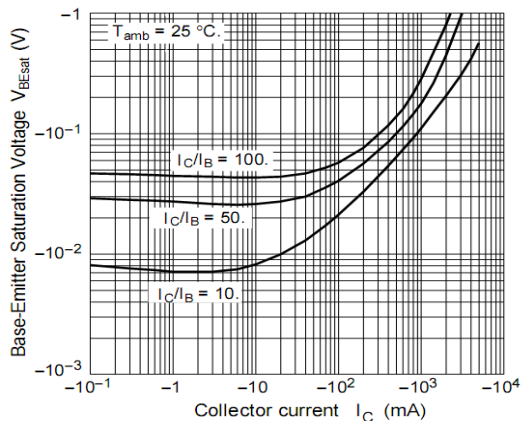


Figure 4. Base-Emitter Saturation Voltage

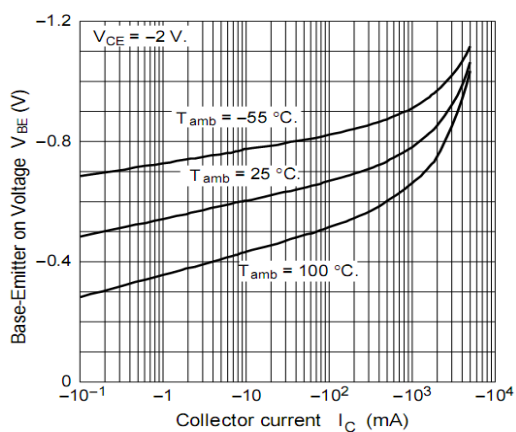


Figure 5. Base-Emitter on Voltage

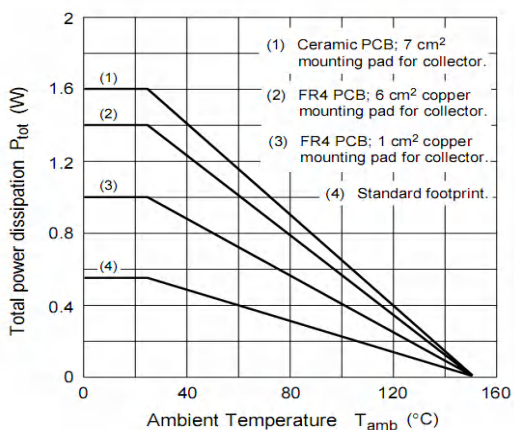
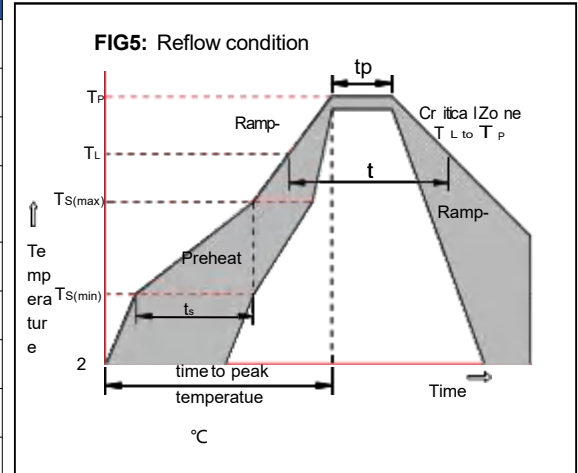


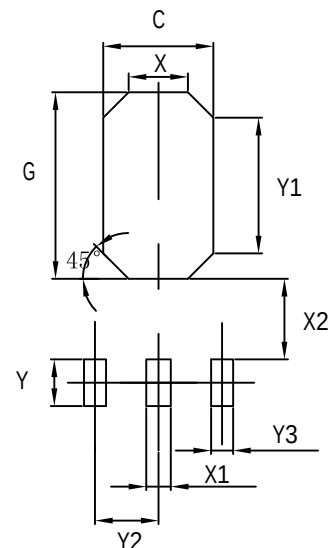
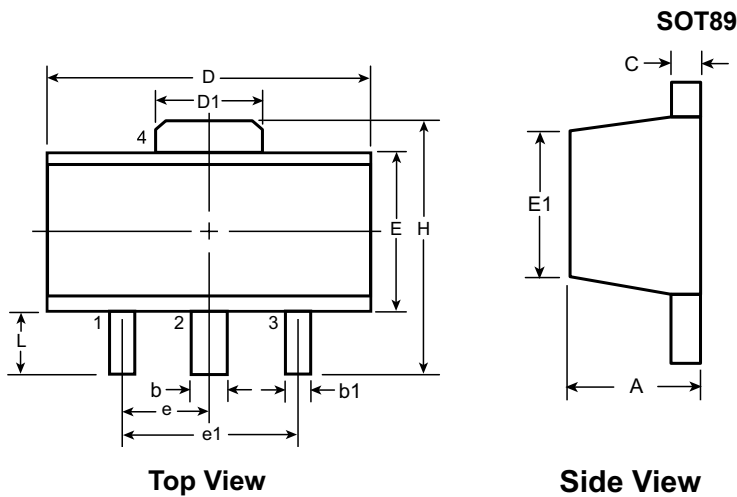
Figure 6. Power derating curves.

Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



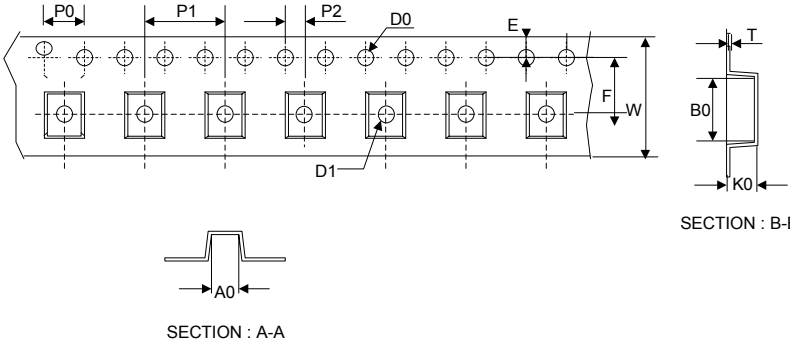
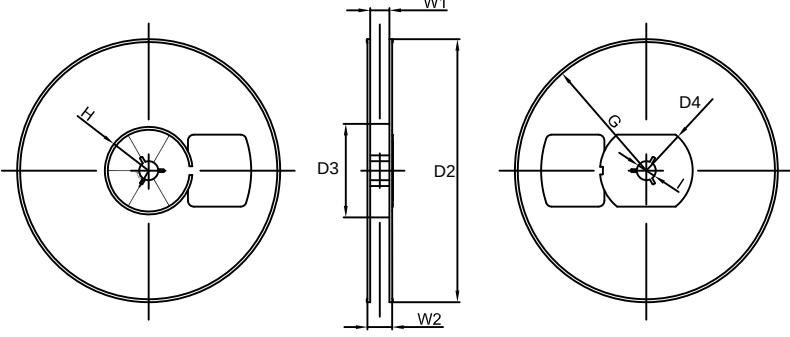
Package Dimensions & Suggested Pad Layout



Symbol		A	b	b1	C	D	D1	E	E1	e	e1	H	L
Dimensions (mm)	MIN	1.40	0.44	0.36	0.3	4.40	1.50	2.29	2.00†	1.50 BSC	3.00 BSC	3.94	0.89
	NOM	-	-	-	-	-	-	-	-			-	-
	MAX	1.60	0.56	0.48	0.5	4.60	1.75	2.60	2.29			4.25	1.20

Dimensions	Value (in mm)
C	2.50
G	3.60
X	1.40
X1	0.90
X2	0.90
Y	1.40
Y1	2.60
Y2	1.50
Y3	0.90

Tape & reel specification

Tape		Symbol	Dimension (mm)
 SECTION : A-A SECTION : B-B		P0	4.00±0.20
		P1	8.00±0.20
		P2	2.00±0.20
		D0	1.60±0.20
		D1	1.60±0.20
		E	1.75±0.20
		F	7.50±0.15
		W	16.00±0.20
		A0	6.30±0.20
		B0	8.25±0.20
		K0	2.60±0.20
		T	0.23±0.10
		D2	180.0±5.0
		D3	60Min.
		D4	R32.0±2.0
13" Reel			
		G	R86.5±2.0
		H	R30.0±2.0
		I	13.0±2.0
		W1	13.20±2.0
		W2	16.50±2.0
		Quantity: 1000PCS	