

Applications

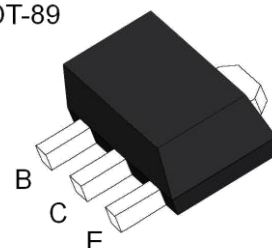
- Supply line switching
- Battery charger
- DC/DC converter
- LCD backlighting.

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 : S43

SOT-89



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

Thermal Characteristics

Parameter	Symbol	Conditions	Value	Unit
Thermal resistance from junction to ambient	$R_{th(j-a)}$	in free air; Note1	225	°C / W
		Note2	125	
		Note3	90	
		Note4	80	
Thermal resistance from junction to soldering point	$R_{th(j-s)}$		16	°C / 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 1 cm²
3. Device mounted on a printed-circuit board, single sided copper, tinplated and mounting pad for collector 6 cm²
4. Device mounted on a ceramic printed-circuit board 7cm² , single-sided copper, tinplated.

Characteristicslectrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	50			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1mA, I_B = 0$	50			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu A, I_C = 0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB} = 50V, I_E = 0$			100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			100	nA
DC current gain*	h_{FE}	$V_{CE} = 2V, I_B = 0.1A$	300			
		$V_{CE} = 2V, I_B = 0.5A$	300			
		$V_{CE} = 2V, I_B = 1A$	300		700	
		$V_{CE} = 2V, I_B = 2A$	200			
		$V_{CE} = -2V, I_B = -3A$	100			
Collector-emitter saturation voltage*	$V_{CE(sat)}$	$I_C = 500mA, I_B = 50mA$			80	mV
		$I_C = 1A, I_B = 50mA$			160	
		$I_C = 2A, I_B = 100mA$			280	
		$I_C = 2A, I_B = 200mA$			260	
		$I_C = 3A, I_B = 300mA$			370	
Equivalent on-resistance	$R_{CE(sat)}$	$I_C = 2A, I_B = 200mA$			130	mΩ
Base-emitter saturation voltage*	$V_{BE(sat)}$	$I_C = 2A, I_B = 100mA$			1.1	V
		$I_C = 3A, I_B = 300mA$			1.2	
Base-emitter turn on voltage	$V_{BE(on)}$	$V_{CE} = 2V, I_C = 1A$			1.1	V
Transition frequency	f_T	$V_{CE} = 5V, I_E = 100mA$ $f=100MHz$	100			MHz
Collector output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f=1MHz$			35	pF

* Pulse Test: PW=300μs, duty Cycle=2% Pulsed

Typical Characteristics

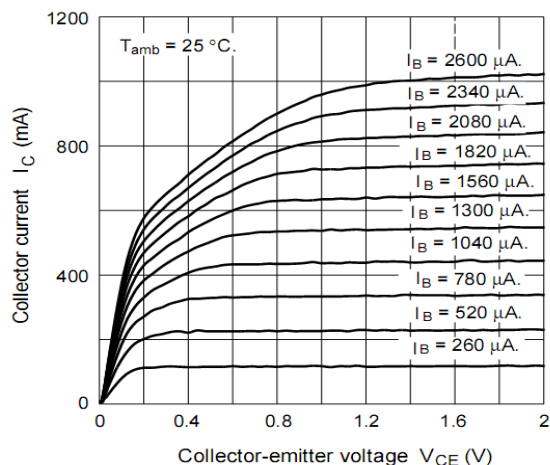


Figure 1. Static Characteristic

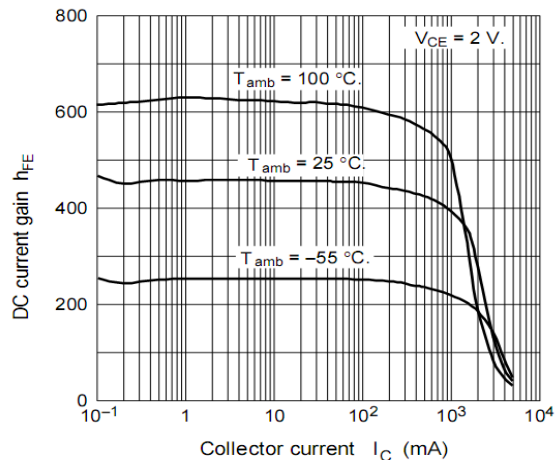


Figure 2. DC current Gain

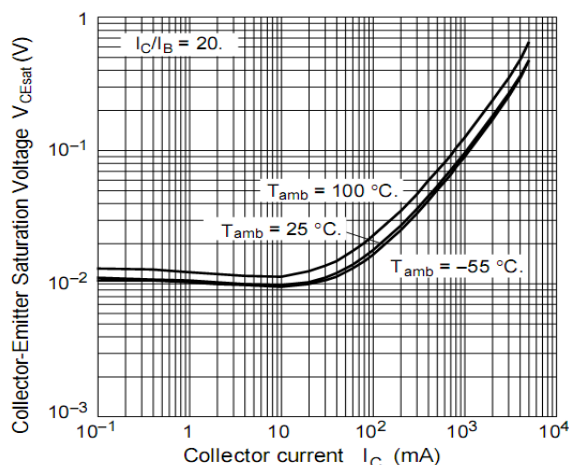


Figure 3. Collector-Emitter Saturation Voltage

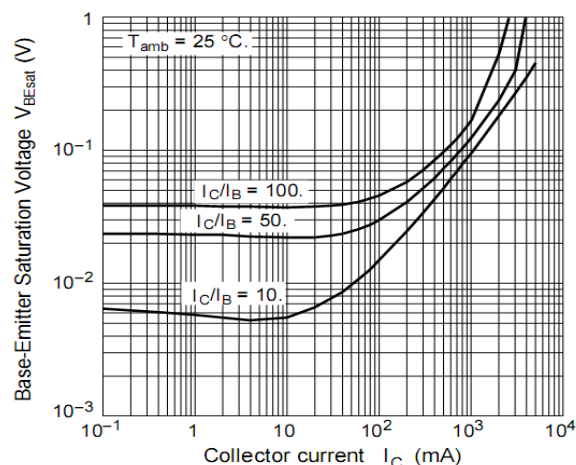


Figure 4. Base-Emitter Saturation Voltage

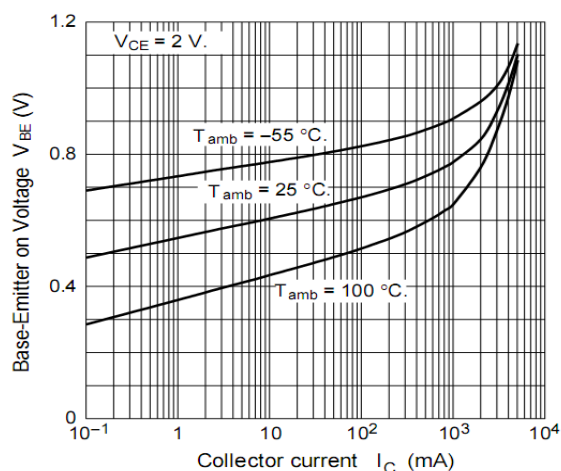


Figure 5. Base-Emitter on Voltage

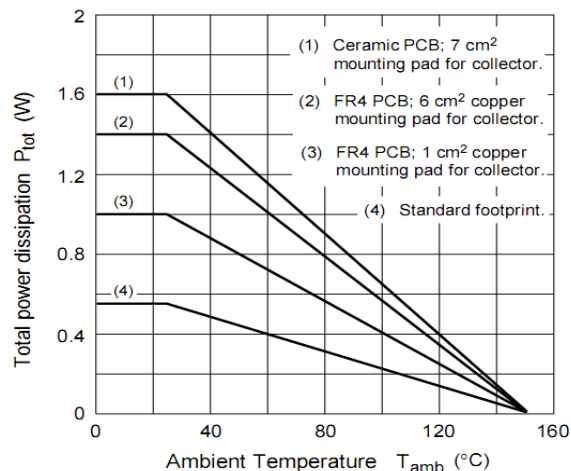
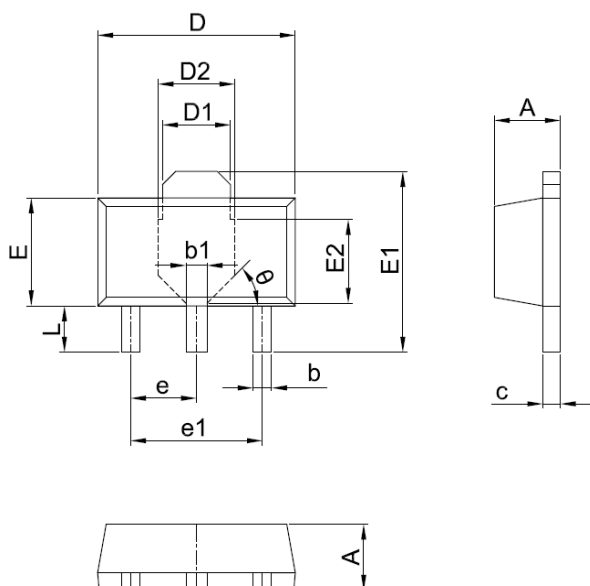


Figure 6. Power derating curves.

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047