



MT2013

100V PNP LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

$BV_{CEO} = -100V$; $R_{SAT} = 57m\Omega$; $I_C = -3.5A$

DESCRIPTION

Packaged in the SOT89 outline this new low saturation 100V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits, line switching and various driving and power management functions.

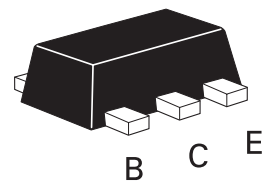
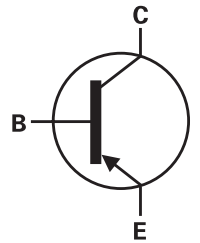
FEATURES

- 3.5 amps continuous current
- Up to 10 amps peak current
- Very low saturation voltages

APPLICATIONS

- Motor driving
- Line switching
- High side switches
- Subscriber line interface cards (SLIC)

MARKING : 953



SOT- 89-3L



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CB0}	-140	V
Collector-emitter voltage	BV_{CEO}	-100	V
Emitter-base voltage	BV_{EBO}	-7	V
Continuous collector current ^(a)	I_C	-3.5	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at $T_A=25^\circ\text{C}$ ^(a)	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at $T_A=25^\circ\text{C}$ ^(b)	P_D	2.1	W
Linear derating factor		16.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE

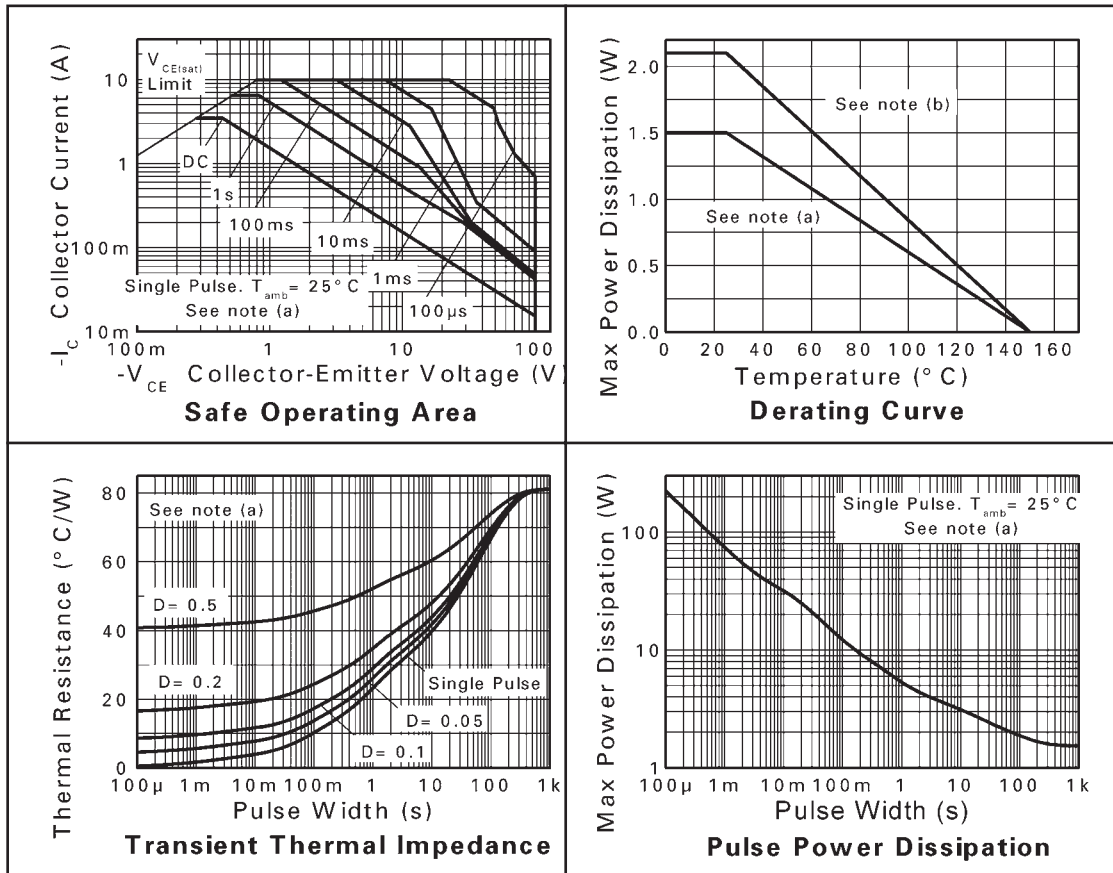
PARAMETER	SYMBOL	LIMIT	UNIT
Junction to ambient ^(a)	$R_{\theta JA}$	83	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	60	°C/W

NOTES:

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

CHARACTERISTICS





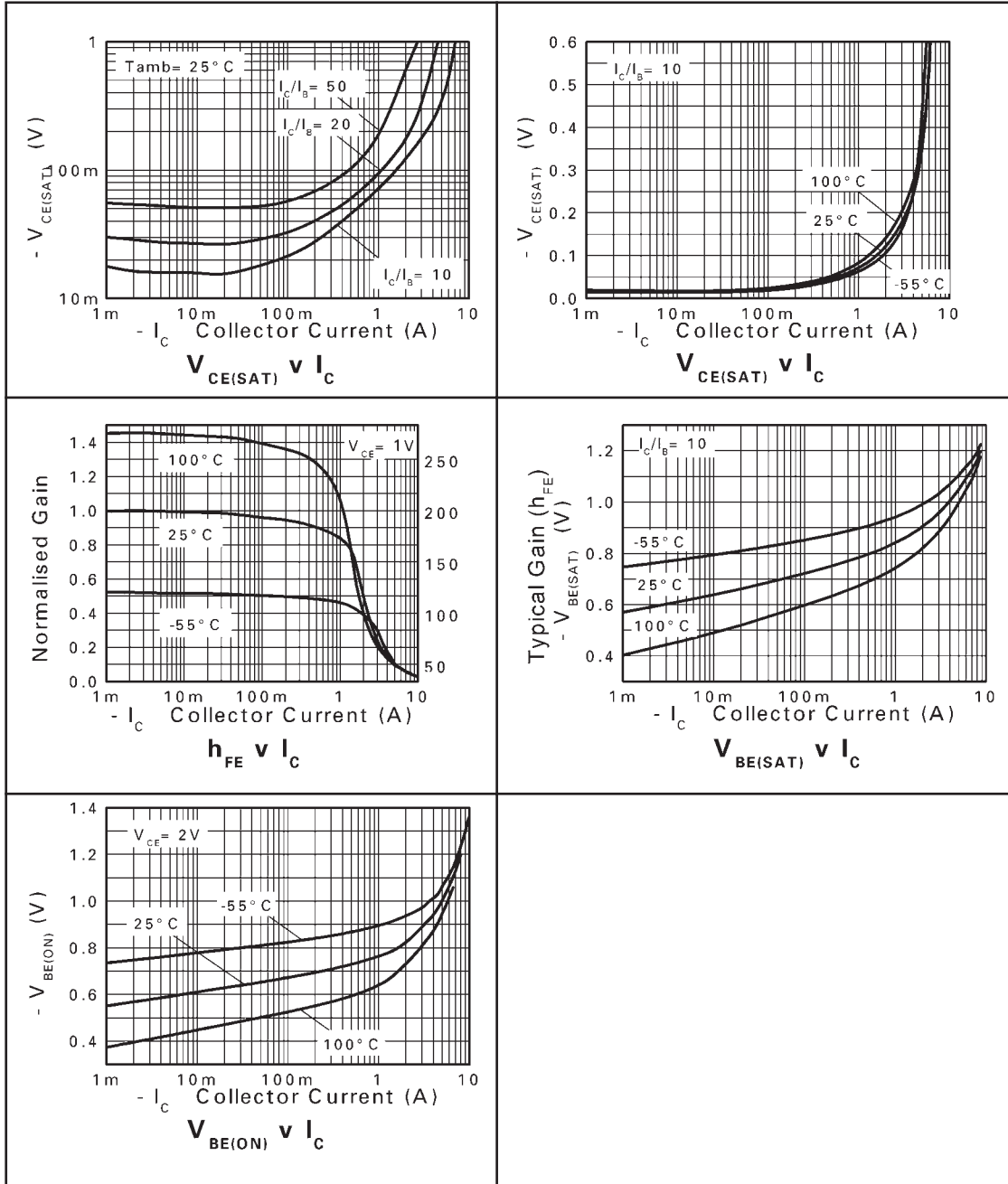
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	-140	-160		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CER}	-140	-160		V	$I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	BV_{CEO}	-100	-115		V	$I_C = -10\text{mA}^*$
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.1		V	$I_E = -100\mu\text{A}$
Collector cut-off current	I_{CBO}		<1	-20 -0.5	nA μA	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb}=100^{\circ}\text{C}$
Collector cut-off current	I_{CER} $R \leq 1\text{k}\Omega$		<1	-20 -0.5	nA μA	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$, $T_{amb}=100^{\circ}\text{C}$
Emitter cut-off current	I_{EBO}		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-20 -65 -110 -230	-30 -85 -135 -300	mV	$I_C = -0.1\text{A}$, $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$, $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$, $I_B = -200\text{mA}^*$ $I_C = -4\text{A}$, $I_B = -400\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		-970	-1060	mV	$I_C = -4\text{A}$, $I_B = -400\text{mA}^*$
Base-emitter turn on voltage	$V_{BE(ON)}$		-910	-1030	mV	$I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$
Static forward current transfer ratio	h_{FE}	100 100 25 15	250 200 50 30 5	300		$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -3\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -4\text{A}$, $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$, $V_{CE} = -1\text{V}^*$
Transition frequency	f_T		125		MHz	$I_C = 100\text{mA}$, $V_{CE} = 10\text{V}$ $f=50\text{MHz}$
Output capacitance	C_{OBO}		42		pF	$V_{CB} = -10\text{V}$, $f=1\text{MHz}^*$
Switching times	t_{ON} t_{OFF}		42 540		ns	$I_C = 1\text{A}$, $V_{CC} = 10\text{V}$, $I_{B1} = I_{B2} = 100\text{mA}$

* Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

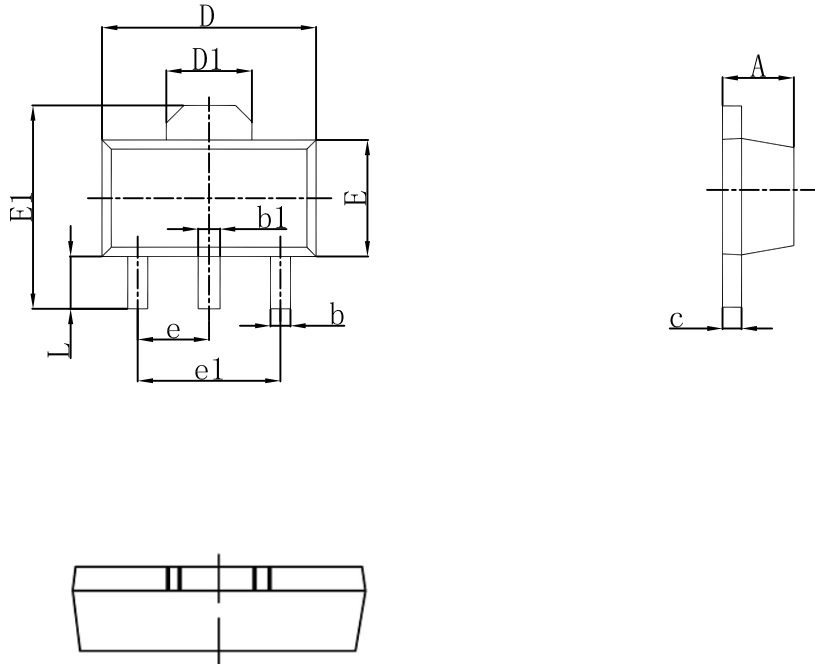


TYPICAL CHARACTERISTICS





SOT-89-3L Outlines Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047