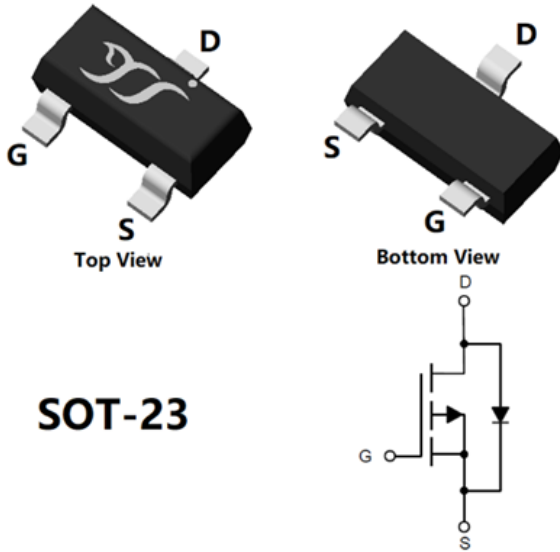


## P-Channel Enhancement Mode Field Effect Transistor



**SOT-23**

### Product Summary

- $V_{DS}$  -60 V
- $I_D$  -0.17 A
- $R_{DS(ON)}$  (at  $V_{GS}=-10V$ ) <8 ohm
- $R_{DS(ON)}$  (at  $V_{GS}=-4.5V$ ) <9.9 ohm

### General Description

- Trench Power LV MOSFET technology
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

### Applications

- Video monitor
- Power management

### ■ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-60	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$ @ Steady State	-0.17
		$T_A=70^\circ\text{C}$ @ Steady State	-0.14
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-1.2	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	0.35	W
Thermal Resistance Junction-to-Ambient <sup>B</sup>	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
BSS84	F2	B84.	3000	30000	120000	7" reel



# BSS84

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.9	-1.4	-2.0	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> =-0.15A		3.3	8	Ω
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-0.15A		3.5	9.9	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-0.17A, V <sub>GS</sub> =0V			-1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-0.17	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, f=1MHZ		43		pF
Output Capacitance	C <sub>oss</sub>			2.9		
Reverse Transfer Capacitance	C <sub>rss</sub>			1.8		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-30V, I <sub>D</sub> =-0.15 A		1.77		nC
Gate Source Charge	Q <sub>gs</sub>			0.57		
Gate Drain Charge	Q <sub>gd</sub>			0.18		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =-0.15A, di/dt=100A/μs		13		
Reverse Recovery Time	t <sub>rr</sub>			23		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-30V, I <sub>D</sub> =-0.15A, R <sub>GEN</sub> =2.5Ω		8.6		ns
Turn-on Rise Time	t <sub>r</sub>			20		
Turn-off Delay Time	t <sub>D(off)</sub>			15		
Turn-off Fall Time	t <sub>f</sub>			77		

A. Pulse Test: Pulse Width ≤ 10μs, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



■ Typical Performance Characteristics

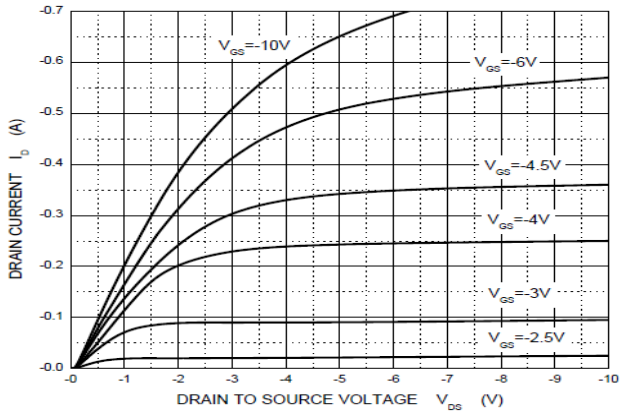


Figure1. Output Characteristics

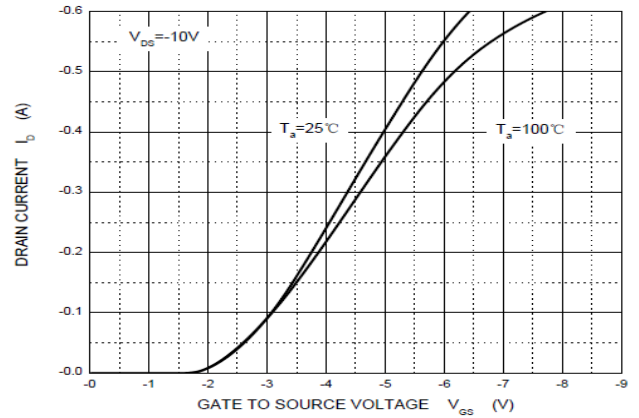


Figure2. Transfer Characteristics

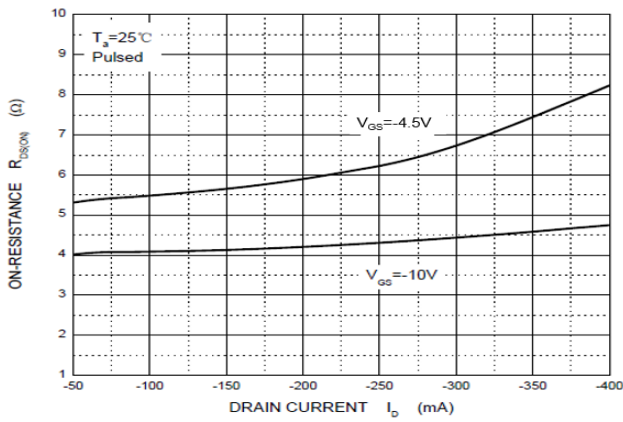


Figure3. Drain-Source on Resistance

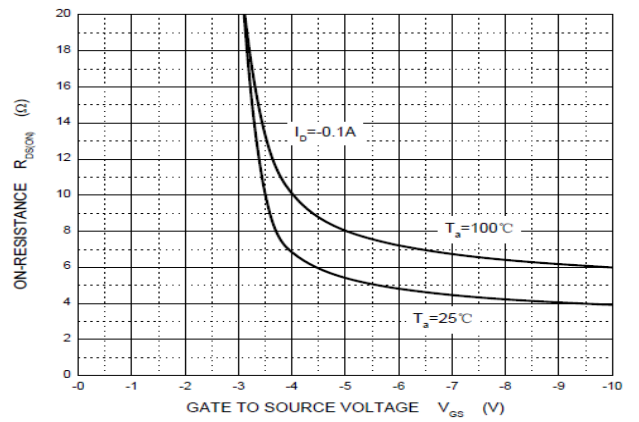


Figure4. Drain-Source on Resistance

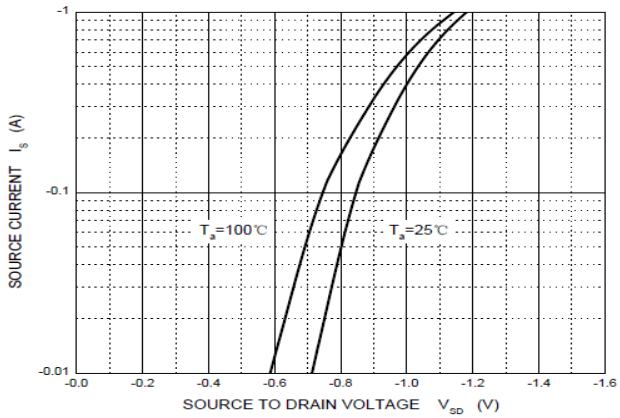


Figure5. Diode Forward Voltage vs. current

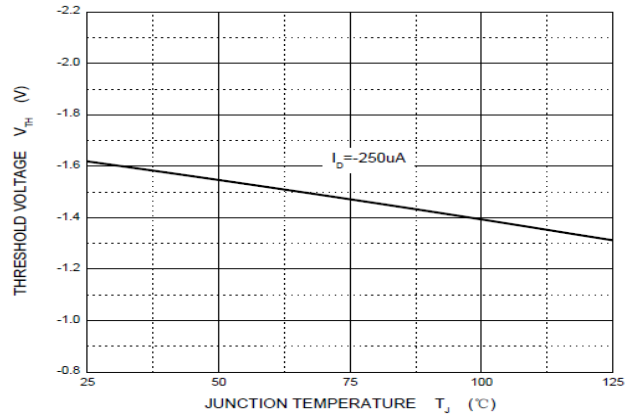


Figure6. Gate Threshold vs. Junction Temperature



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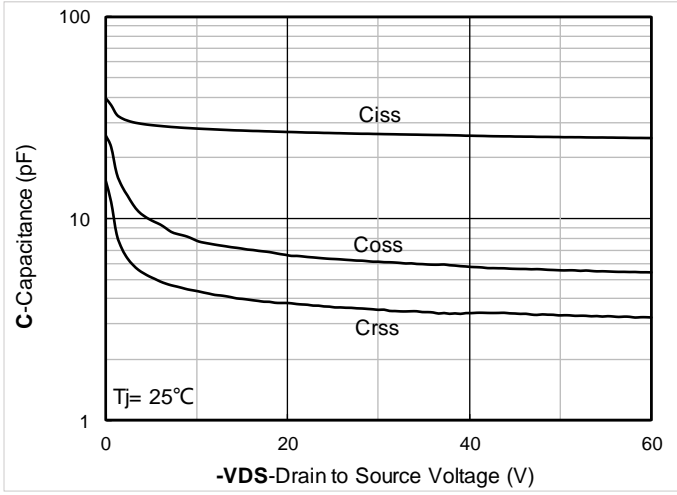


Figure7. Capacitance Characteristics

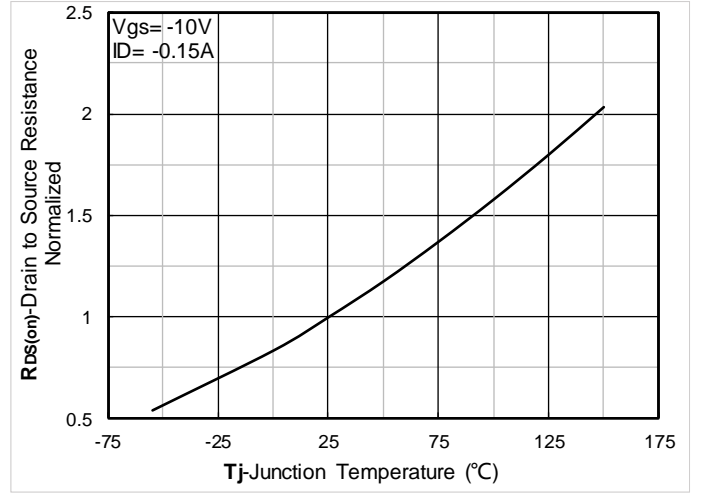
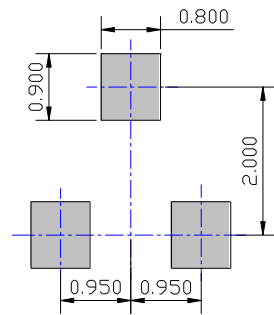
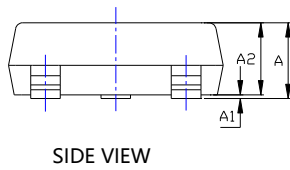
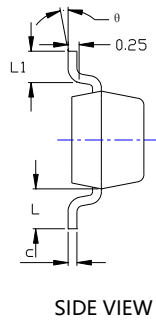
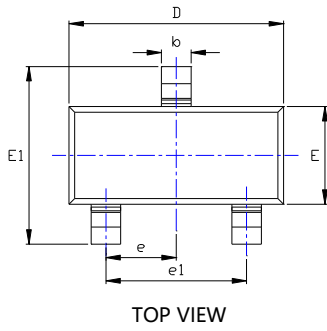


Figure8. Normalized On-Resistance

## ■ SOT-23 Package information



UNIT: mm

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

**NOTE:**

1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.

2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.

3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



## BSS84

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