BSS83P-VB Datasheet
P-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	$V_{GS(th)}$ (V)	I_D (mA)
- 60	3 at V_{GS} = - 10 V	- 1 to - 3	-500

FEATURES

- **Halogen-free According to IEC 61249-2-21 Definition**
- TrenchFET[®] Power MOSFET
- High-Side Switching
- Low On-Resistance: 3 Ω
- Low Threshold: - 2 V (typ.)
- Fast Swtiching Speed: 20 ns (typ.)
- Low Input Capacitance: 20 pF (typ.)
- Compliant to RoHS Directive 2002/95/EC

Pb
Pb-free

RoHS
COMPLIANT

**TO-236
(SOT-23)**

G 1

S 2

3 D

S

G

D

P-Channel MOSFET
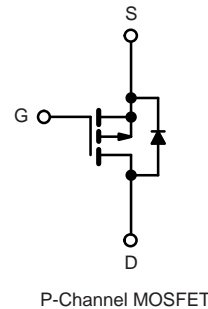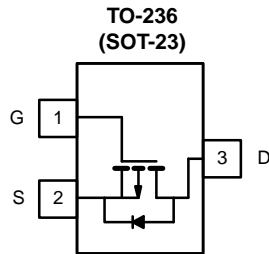
ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	- 60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current[a]	T_A = 25 °C	I_D	- 500	mA
	T_A = 100 °C		- 350	
Pulsed Drain Current[b]		I_{DM}	-1500	
Power Dissipation[a]	T_A = 25 °C	P_D	460	mW
	T_A = 100 °C		240	
Maximum Junction-to-Ambient[a]		R_{thJA}	350	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

Notes:
a. Surface mounted on FR4 board.
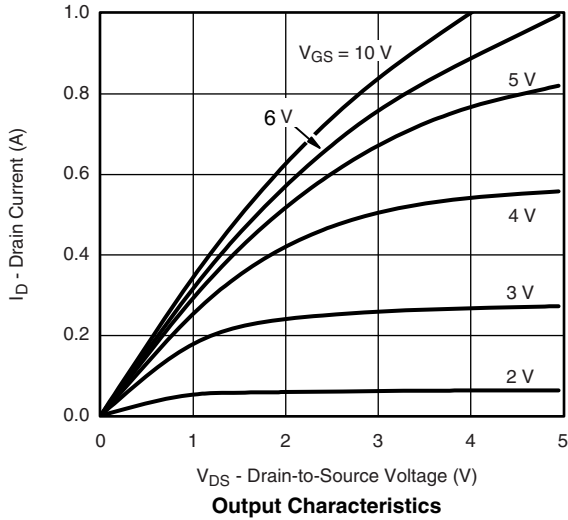b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS T_A = 25 °C, unless otherwise noted

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.[a]	Max.	
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = - 10 µA	- 60			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 1		- 3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 10	µA
		V_{DS} = 0 V, V_{GS} = ± 10 V			± 200	nA
		V_{DS} = 0 V, V_{GS} = ± 10 V, T_J = 85 °C			± 500	
		V_{DS} = 0 V, V_{GS} = ± 5 V			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 60 V, V_{GS} = 0 V			- 25	
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 85 °C			- 250	
On-State Drain Current[a]	$I_{D(on)}$	V_{GS} = - 10 V, V_{DS} = - 4.5 V	- 50			mA
		V_{GS} = - 10 V, V_{DS} = - 10 V	- 600			
Drain-Source On-Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 25 mA		4		Ω
		V_{GS} = - 10 V, I_D = - 100 mA		3		
		V_{GS} = - 10 V, I_D = - 100 mA, T_J =125 °C		9		
Forward Transconductance[a]	g_{fs}	V_{DS} = - 10 V, I_D = - 100 mA	80			mS
Diode Forward Voltage	V_{SD}	I_S = - 100 mA, V_{GS} = 0 V			- 1.4	V
Dynamic						
Total Gate Charge	Q_g	V_{DS} = - 30 V, V_{GS} = - 15 V $I_D \cong$ - 100 mA		2.0		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			0.8		
Input Capacitance	C_{iss}	V_{DS} = - 25 V, V_{GS} = 0 V f = 1 MHz		23		pF
Output Capacitance	C_{oss}			10		
Reverse Transfer Capacitance	C_{rss}			5		
Switching[b]						
Turn-On Time	$t_{d(on)}$	V_{DD} = - 25 V, R_L = 150 Ω $I_D \cong$ - 200 mA, V_{GEN} = - 10 V, R_g = 10 Ω		20		ns
Turn-Off Time	$t_{d(off)}$			35		

Notes:
a. Pulse test: PW ≤ 300 µs duty cycle ≤ 2 %.
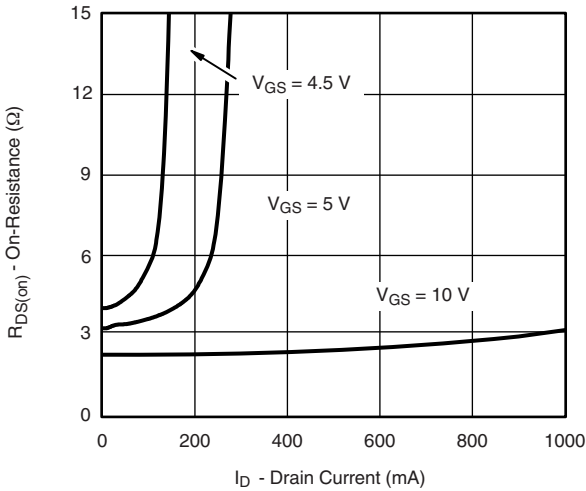b. Switching time is essentially independent of operating temperature.

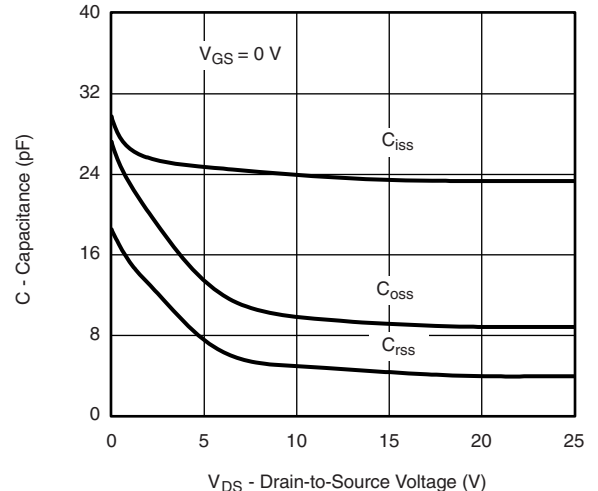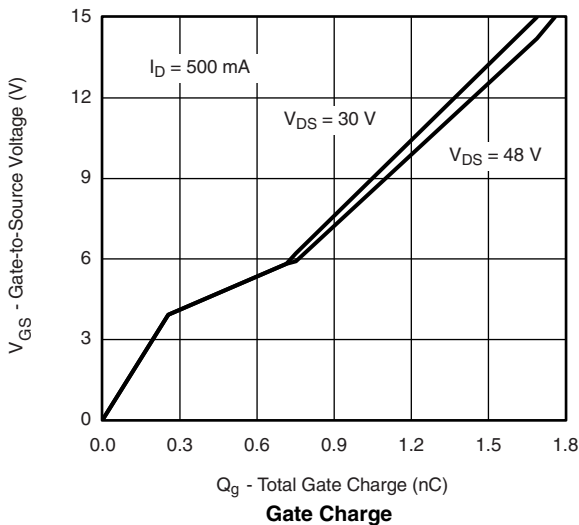**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted

Output Characteristics
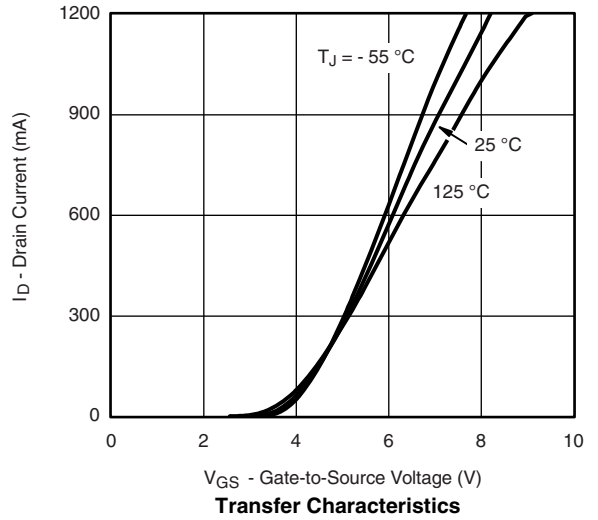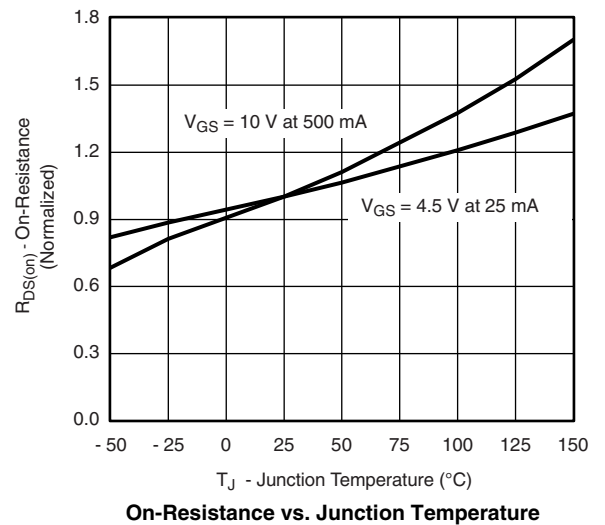
Transfer Characteristics

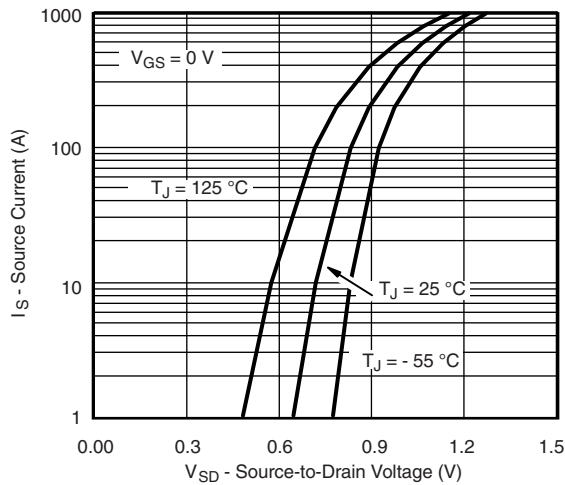**On-Resistance vs. Drain Current**

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

Source-Drain Diode Forward Voltage
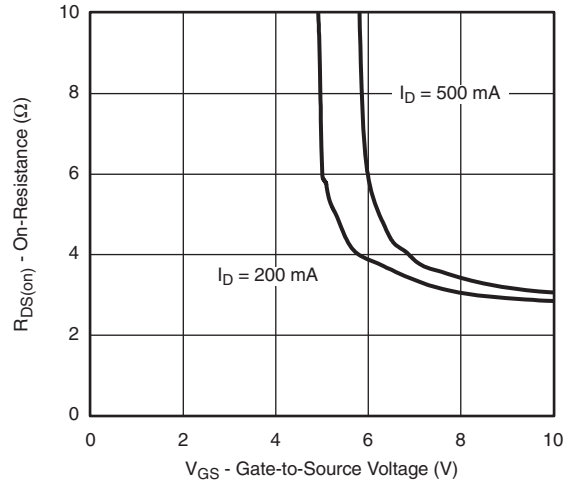
On-Resistance vs. Gate-Source Voltage
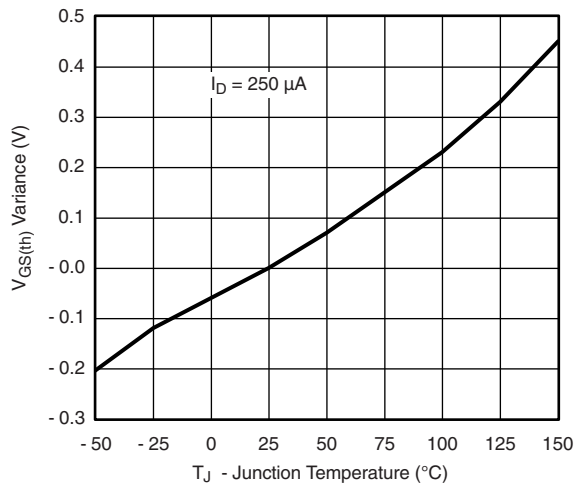
Threshold Voltage Variance Over Temperature

Single Pulse Power, Junction-to-Ambient

Notes:

1. Duty Cycle, $D = \dfrac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 350 °C/W
3. $T_{JM} - T_A = P_{DM}Z_{thJA}(t)$
4. Surface Mounted

Normalized Thermal Transient Impedance, Junction-to-Ambient

SOT-23 (TO-236): 3-LEAD

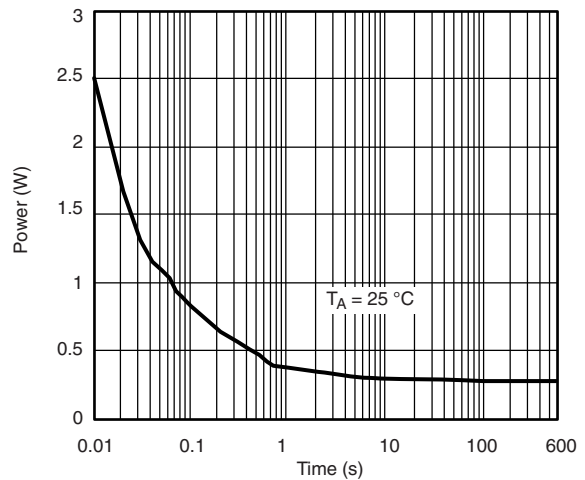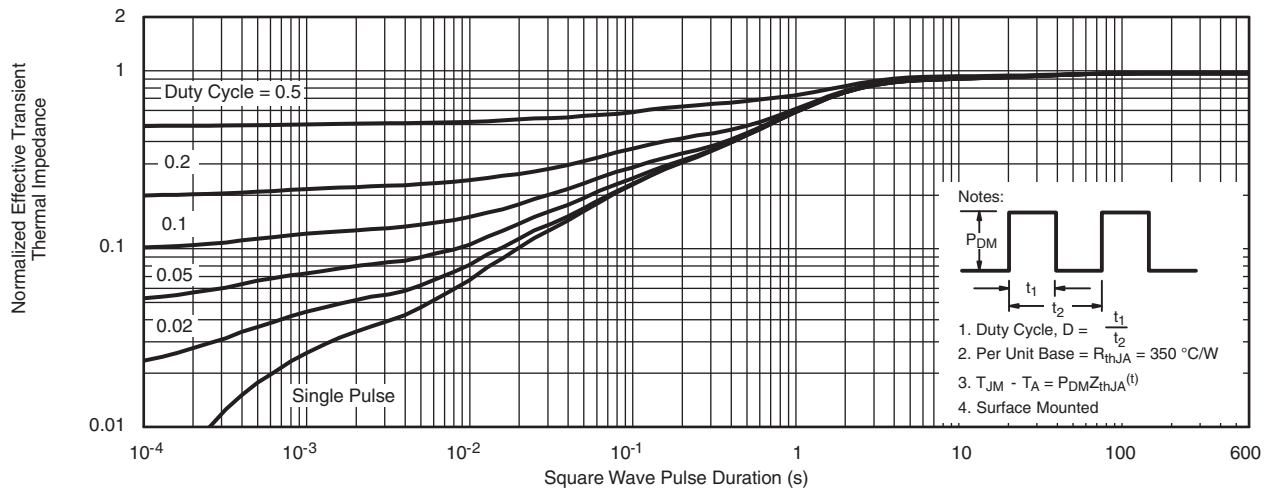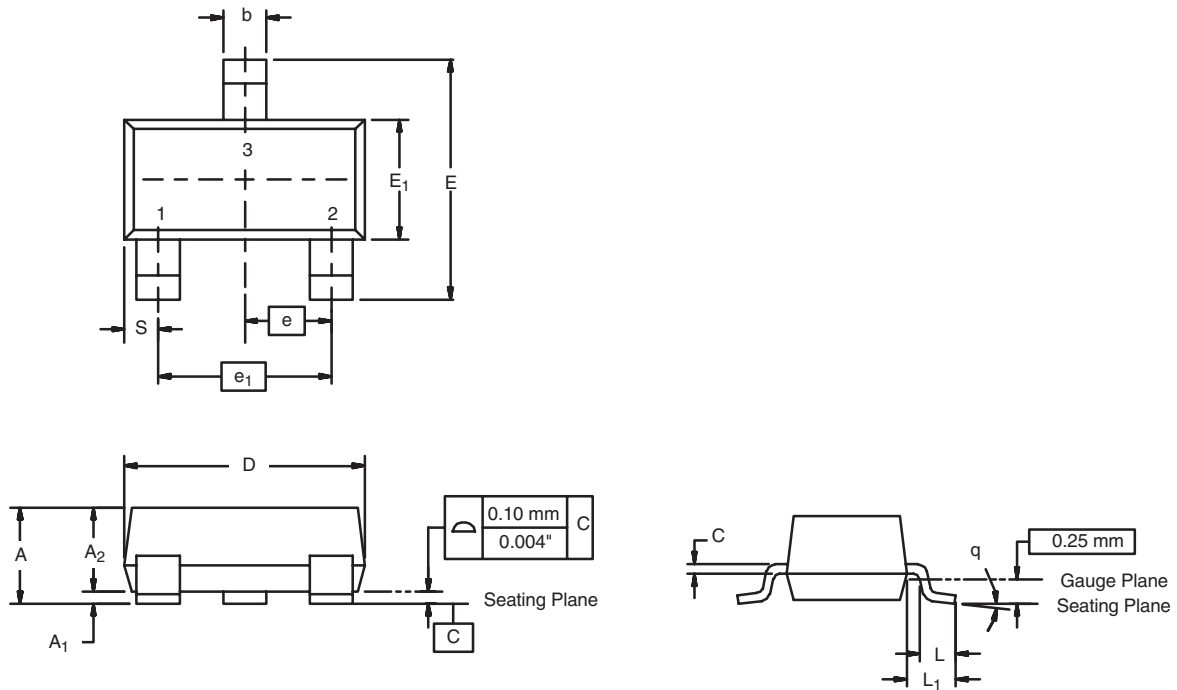| Dim	MILLIMETERS		INCHES	
	Min	**Max**	**Min**	**Max**
A	0.89	1.12	0.035	0.044
A$_1$	0.01	0.10	0.0004	0.004
A$_2$	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E$_1$	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e$_1$	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L$_1$	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°
ECN: S-03946-Rev. K, 09-Jul-01 DWG: 5479				

RECOMMENDED MINIMUM PADS FOR SOT-23

0.037
(0.950)

0.022
(0.559)

0.106
(2.692)

0.049
(1.245)

0.029
(0.724)

0.053
(1.341)

0.097
(2.459)
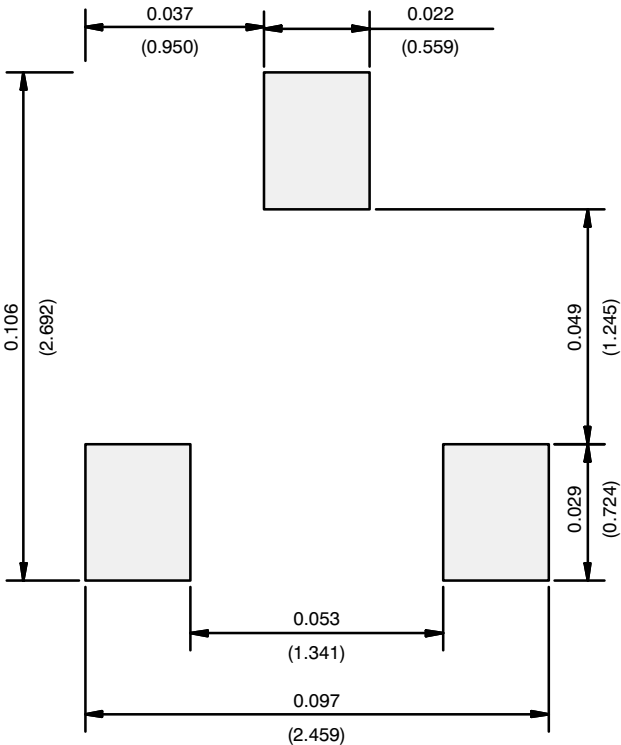
Recommended Minimum Pads
Dimensions in Inches/(mm)

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