



## P-Channel 20-V (D-S) MOSFET

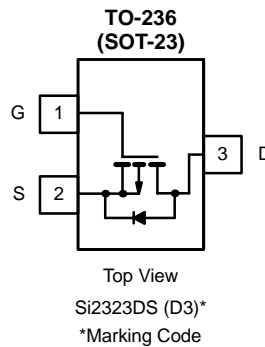
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-20	0.039 @ $V_{GS} = -4.5$ V	-4.7
	0.052 @ $V_{GS} = -2.5$ V	-4.1
	0.068 @ $V_{GS} = -1.8$ V	-3.5

### FEATURES

- TrenchFET® Power MOSFET

### APPLICATIONS

- Load Switch
- PA Switch



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	$V_{DS}$	-20		V
Gate-Source Voltage	$V_{GS}$	$\pm 8$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	-4.7	-3.7	A
	$T_A = 70^\circ\text{C}$	-3.8	-2.9	
Pulsed Drain Current	$I_{DM}$	-20		
Continuous Source Current (Diode Conduction) <sup>a, b</sup>	$I_S$	-1.0	-0.6	W
Maximum Power Dissipation <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	1.25	0.75	
	$T_A = 70^\circ\text{C}$	0.8	0.48	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 5$ sec	75	100	$^\circ\text{C/W}$
	Steady State	120	166	
Maximum Junction-to-Foot (Drain)	Steady State	40	50	

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature.

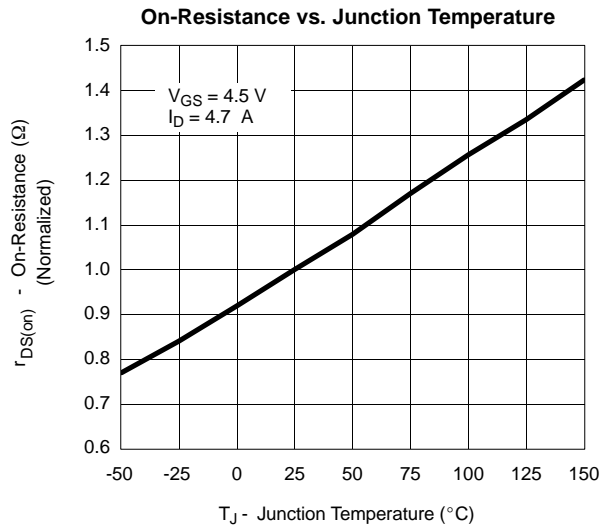
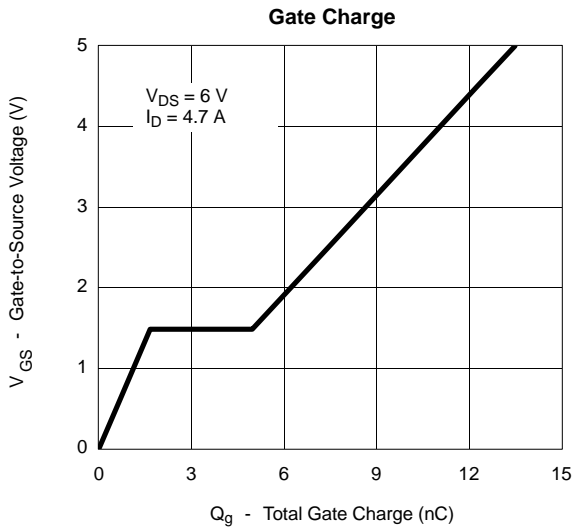
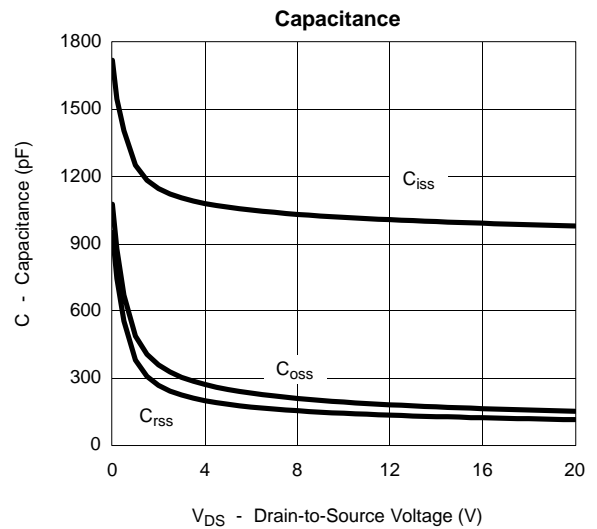
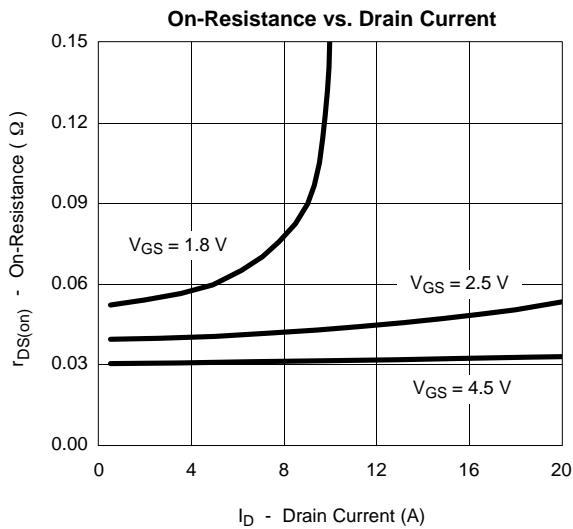
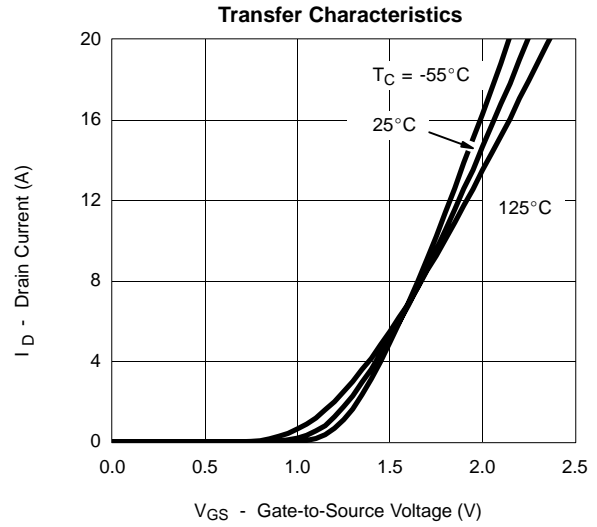
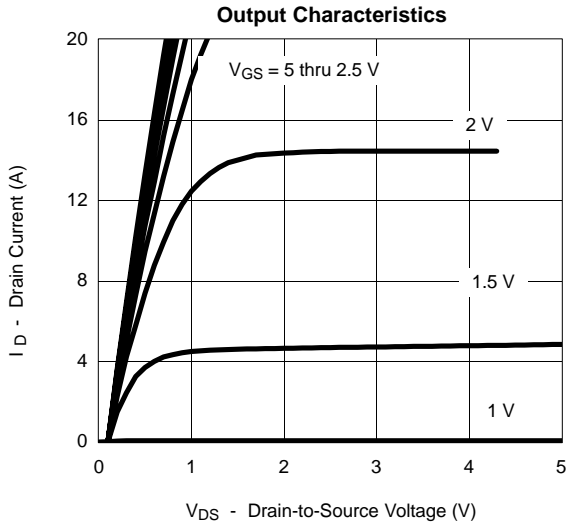
SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -250 μA	-20			V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.40		-1.0	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			-10	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	-20			A
Drain-Source On-Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.7 A		0.031	0.039	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -4.1 A		0.041	0.052	
		V <sub>GS</sub> = -1.8 V, I <sub>D</sub> = -2.0 A		0.054	0.068	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5 V, I <sub>D</sub> = -4.7 A		16		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = -1.0 A, V <sub>GS</sub> = 0 V		0.7	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V I <sub>D</sub> ≅ -4.7 A		12.5	19	nC
Gate-Source Charge	Q <sub>gs</sub>			1.7		
Gate-Drain Charge	Q <sub>gd</sub>			3.3		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0, f = 1 MHz		1020		pF
Output Capacitance	C <sub>oss</sub>			191		
Reverse Transfer Capacitance	C <sub>rss</sub>			140		
<b>Switching<sup>c</sup></b>						
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1.0 A, V <sub>GEN</sub> = -4.5 V R <sub>G</sub> = 6 Ω		25	40	ns
	t <sub>r</sub>			43	65	
Turn-Off Time	t <sub>d(off)</sub>			71	110	
	t <sub>f</sub>			48	75	

## Notes

- Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- For DESIGN AID ONLY, not subject to production testing.
- Switching time is essentially independent of operating temperature.

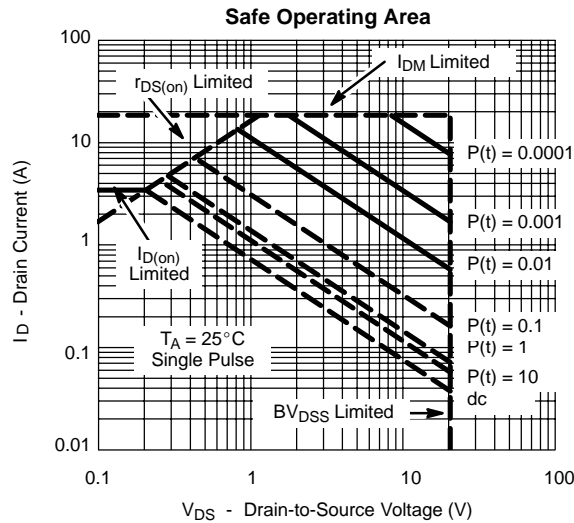
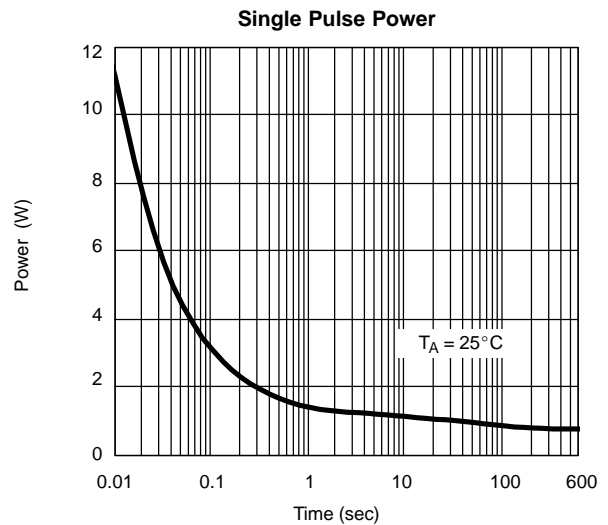
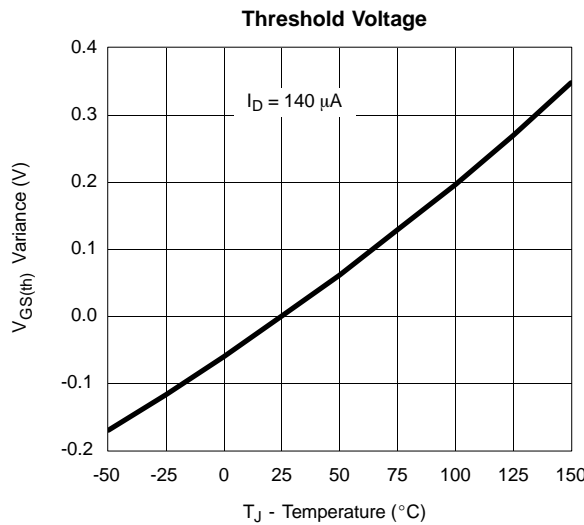
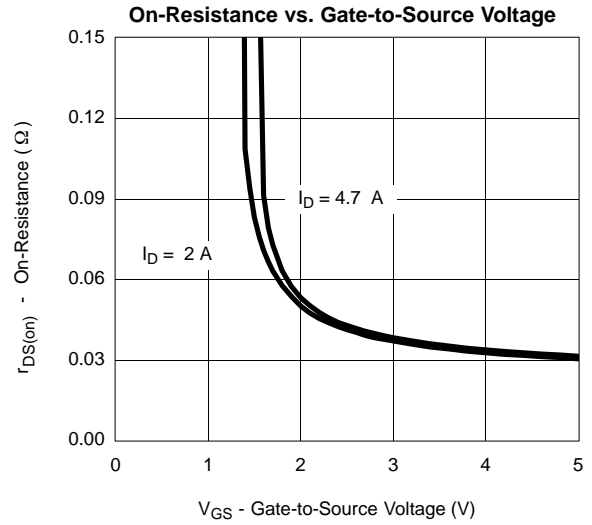
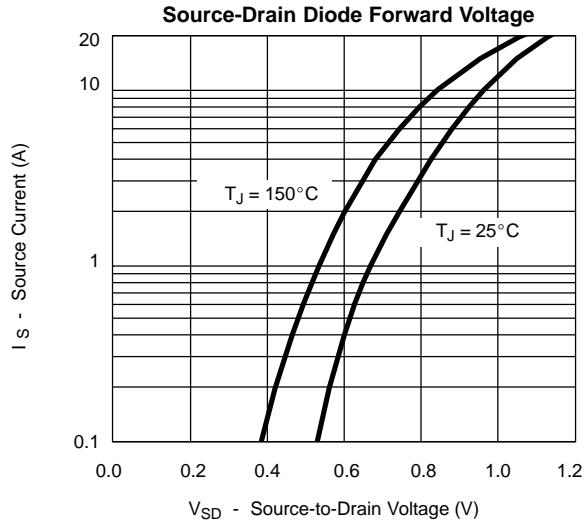


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

