

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

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

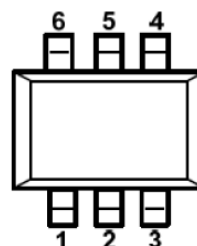
Typical Applications:

- Battery Powered Instruments
- Portable Computing
- Mobile Phones
- GPS Units and Media Players



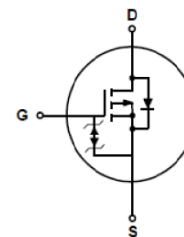
RoHS
COMPLIANT
HALOGEN
FREE

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-20	34 @ $V_{GS} = -4.5V$	-5
	48 @ $V_{GS} = -2.5V$	-3



Top view

TSOP6



Drain: 1,2,5,6 Gate: 3

Source: 4

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current ^a	I_D	$T_A = 25^\circ\text{C}$	-5
		$T_A = 100^\circ\text{C}$	-3.3
Pulsed Drain Current ^b	I_{DM}	-20	A
Continuous Source Current (Diode Conduction) ^a	I_S	-1	A
Power Dissipation ^a	P_D	1.40	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	t \leq 10 sec	62.5
		Steady State	110

Notes

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

Electrical Characteristics

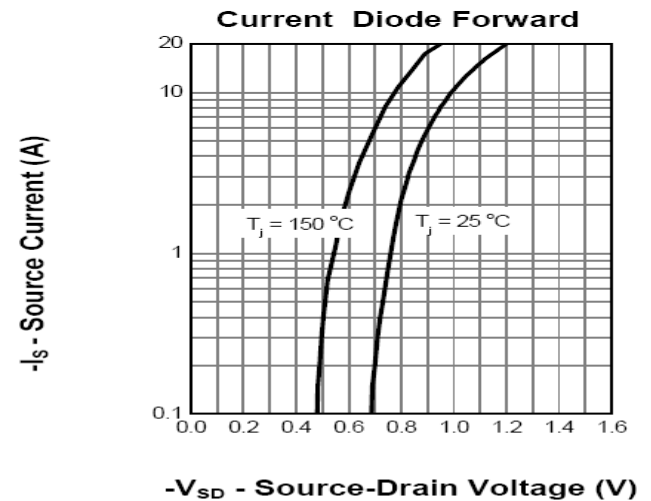
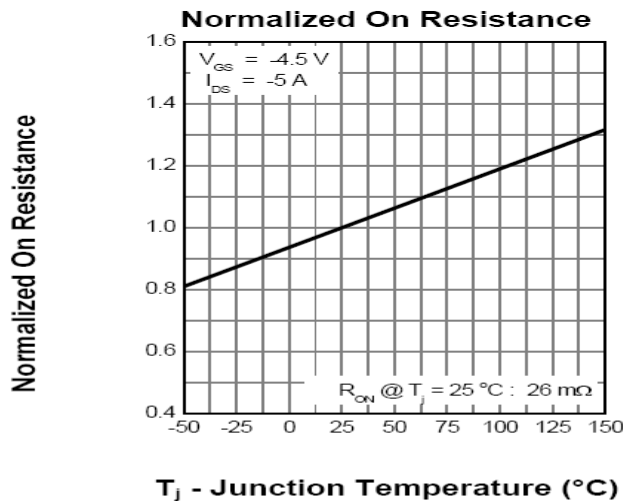
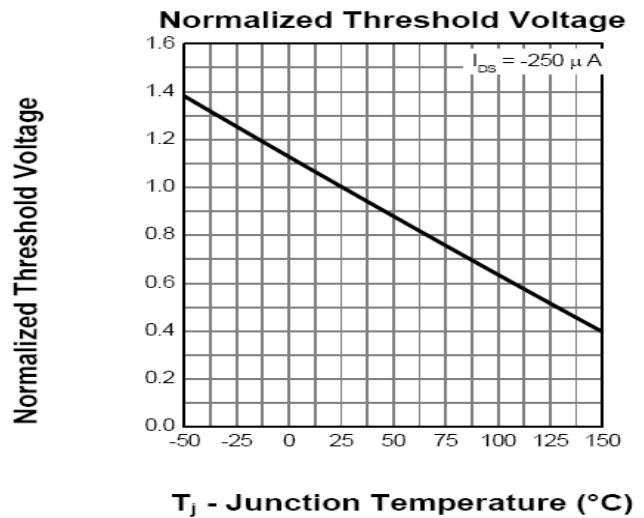
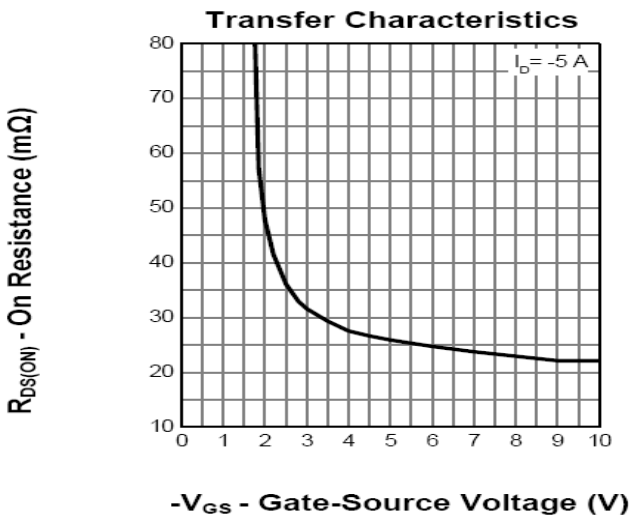
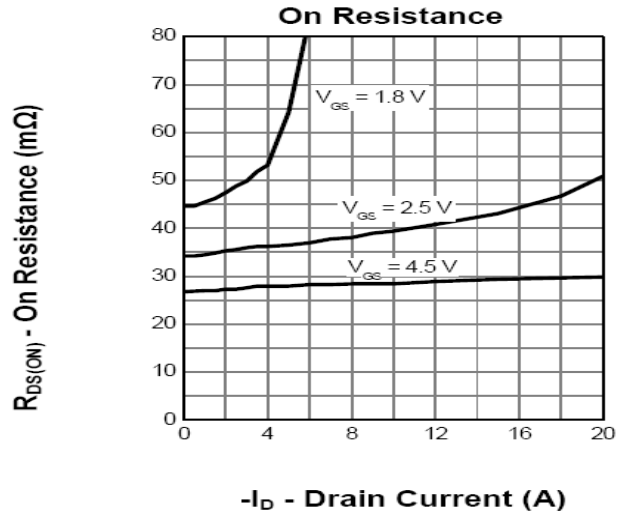
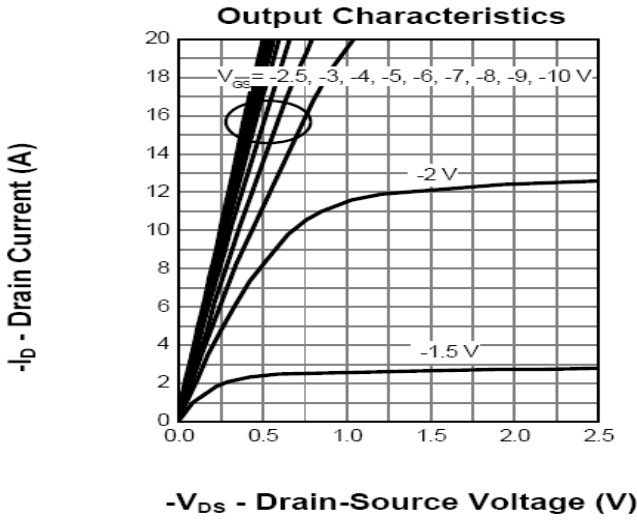
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-20			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 12 V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16 V, V_{GS} = 0 V$			-1	μA
		$V_{DS} = -16 V, V_{GS} = 0 V, T_J = 85^\circ C$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -4.5 V$	10			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -4.5 V, I_D = -5 A$			34	m Ω
		$V_{GS} = -2.5 V, I_D = -3 A$			48	
Forward Transconductance	g_{fs}	$V_{DS} = -15 V, I_D = -5 A$		10		S
Diode Forward Voltage	V_{SD}	$I_S = -1.0 A, V_{GS} = 0 V$		-0.7		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -10 V, V_{GS} = -4.5 V, I_D = -5 A$		16		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 V, R_L = 10 \Omega, I_D = -1 A,$ $V_{GEN} = -4.5 V, R_{GEN} = 6 \Omega$		6		ns
Rise Time	t_r			12		
Turn-Off Delay Time	$t_{d(off)}$			75		
Fall Time	t_f			38		
Input Capacitance	C_{iss}	$V_{DS} = -10 V, V_{GS} = 0 V, f = 1 MHz$		1450		pF
Output Capacitance	C_{oss}			200		
Reverse Transfer Capacitance	C_{rss}			165		

Notes

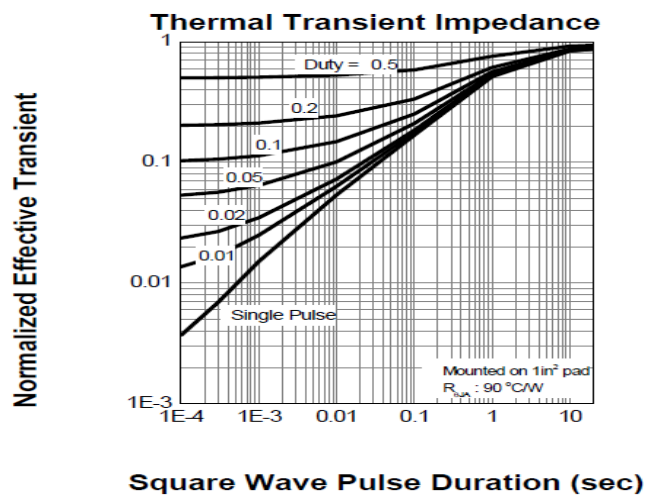
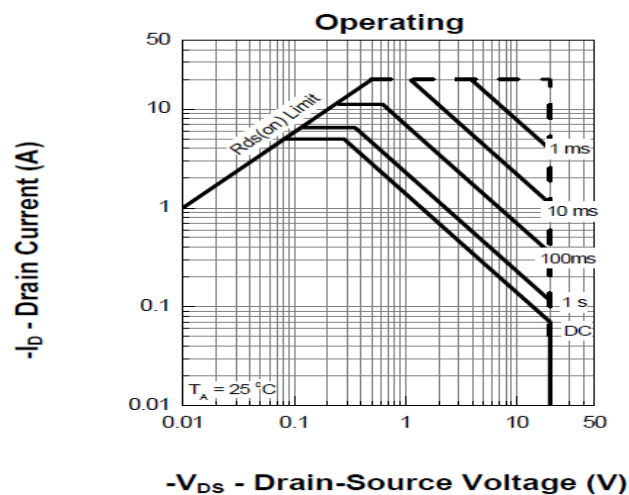
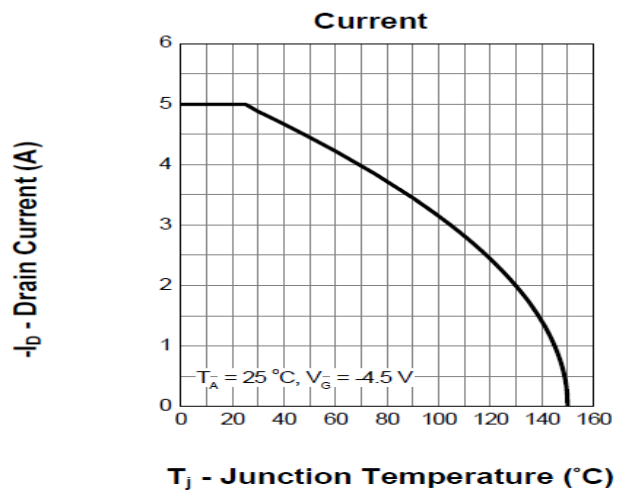
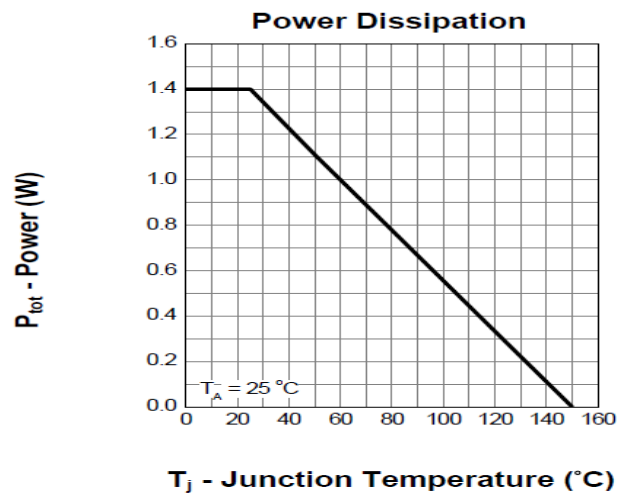
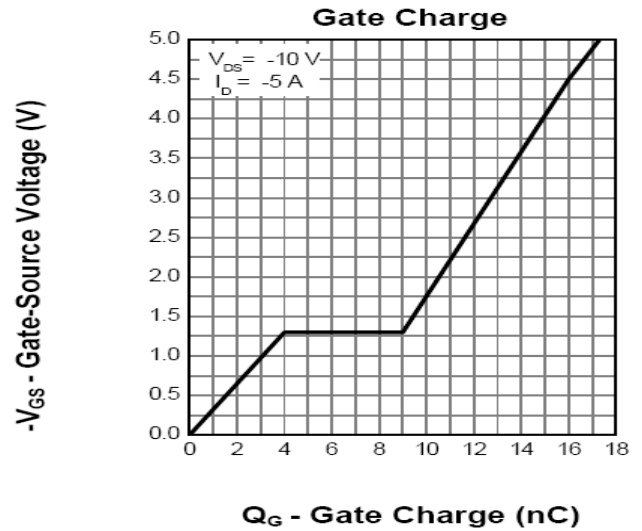
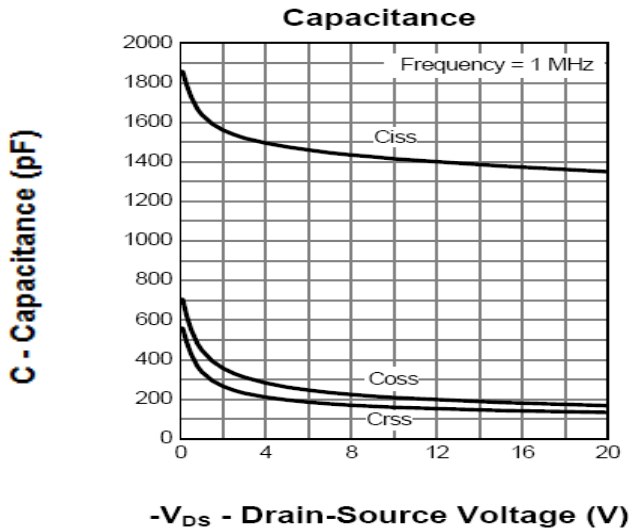
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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Typical Electrical Characteristics

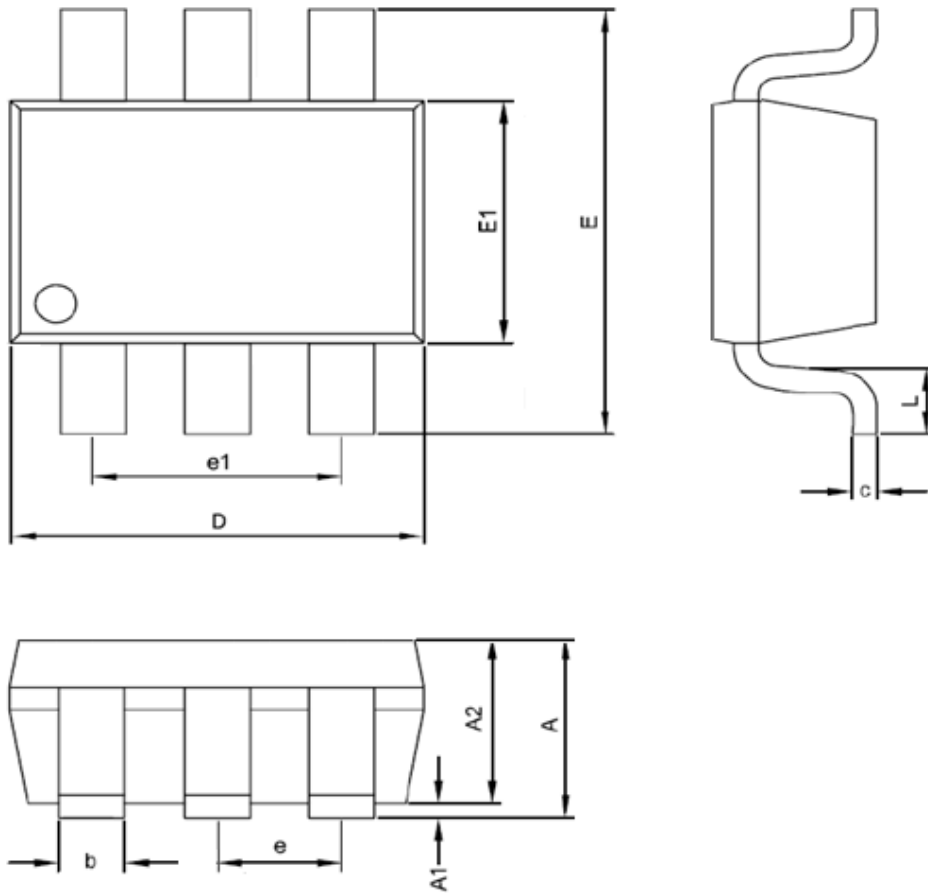


Typical Electrical Characteristics



Package Information

TSOP6



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	---	1.45
A1	---	0.15
A2	0.9	1.3
D	2.90 BSC	
E	2.890 BSC	
E1	1.5	1.7
c	0.08	0.25
b	0.3	0.5
e	0.95BSC	
e1	1.90BSC	
L	0.3	0.6