

P-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe TSOP-6 saves board space
- Fast switching speed
- High performance trench technology

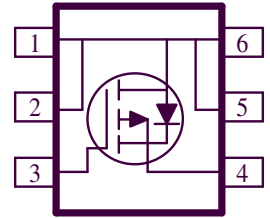
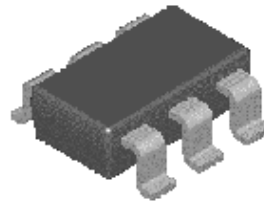
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30.0	0.056 @ $V_{GS} = -10V$	-4.0
	0.083 @ $V_{GS} = -4.5V$	-3.4



RoHS COMPLIANT HALOGEN FREE



Protected



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ C$	-4.0	A
	$T_A = 70^\circ C$	-3.2	
Pulsed Drain Current ^b	I_{DM}	± 20	
Continuous Source Current (Diode Conduction) ^a	I_S	-1.7	A
Power Dissipation ^a	$T_A = 25^\circ C$	2.0	W
	$T_A = 70^\circ C$	1.3	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 5$ sec	62.5	$^\circ C/W$
	Steady state	110	$^\circ C/W$

Notes

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

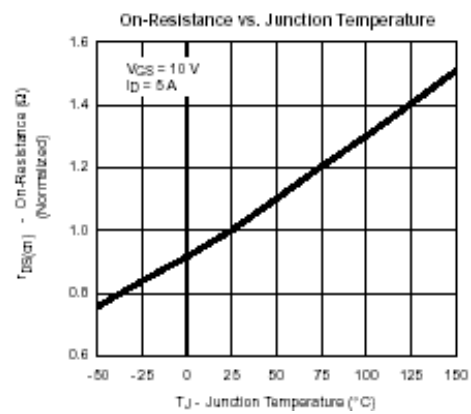
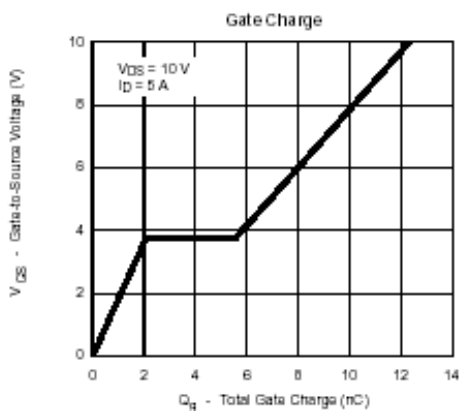
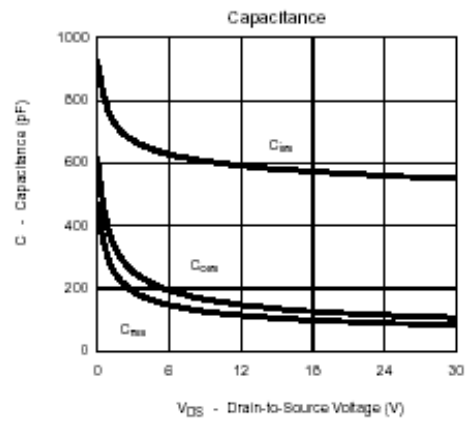
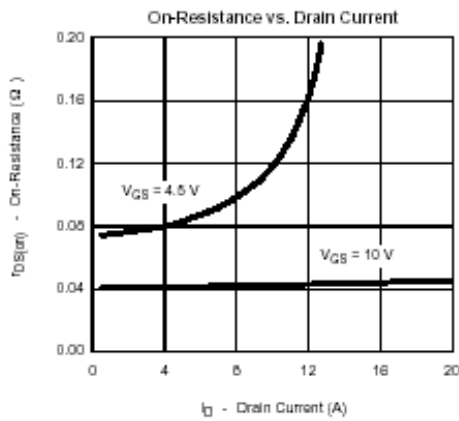
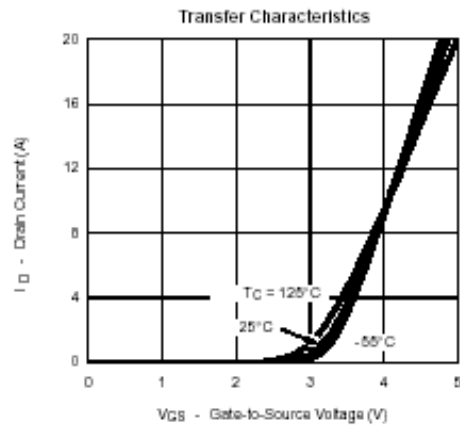
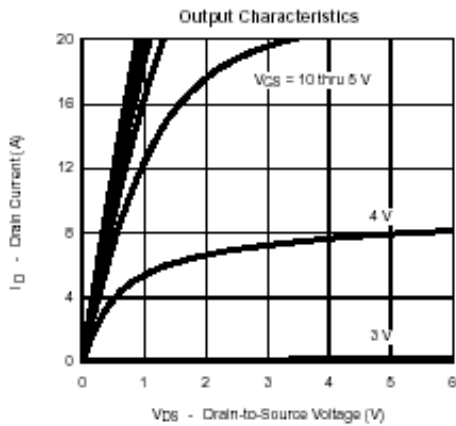
SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 uA	-1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16 V, V _{GS} = 0 V			-1	uA
		V _{DS} = -20 V, V _{GS} = 0 V, T _J = 55°C			-5	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-20			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -10 V, I _D = -4.0 A			56	mΩ
		V _{GS} = -4.5 V, I _D = -3.4 A			83	
Forward Transconductance ^A	g _{fs}	V _{DS} = -5 V, I _D = -3.4 A		10		S
Diode Forward Voltage	V _{SD}	I _S = 1.3 A, V _{GS} = 0 V		-0.8		V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -20 V, V _{GS} = -5 V, I _D = -4.0 A		6.4		nC
Gate-Source Charge	Q _{gs}			2.0		
Gate-Drain Charge	Q _{gd}			3.8		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -20 V, R _L = 6 Ω, I _D = -1 A, V _{GEN} = -10 V		7		ns
Rise Time	t _r			10		
Turn-Off Delay Time	t _{d(off)}			30		
Fall-Time	t _f			22		

Notes

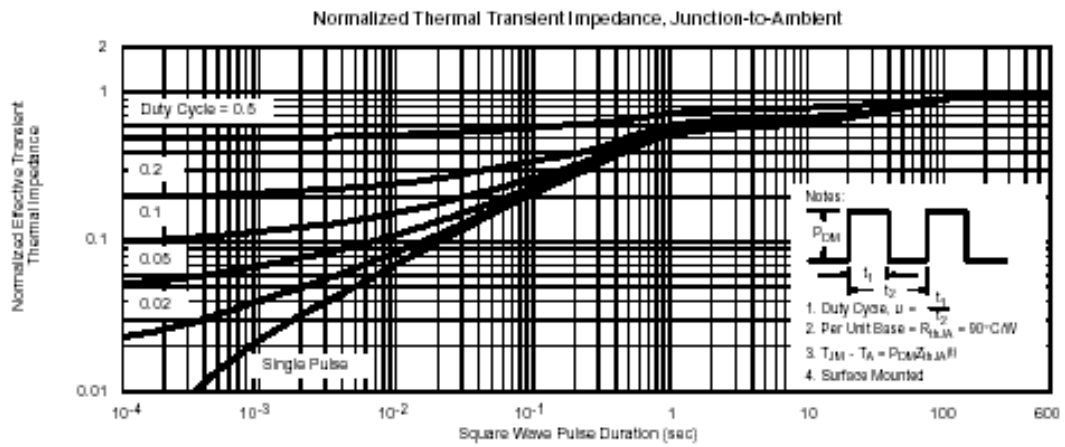
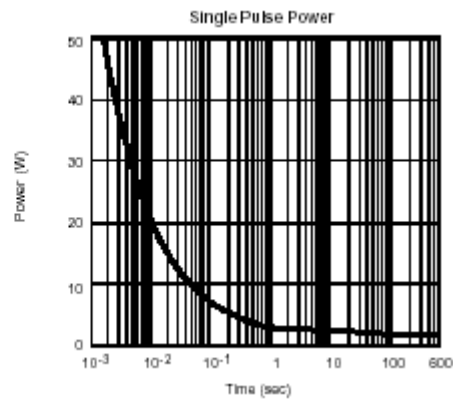
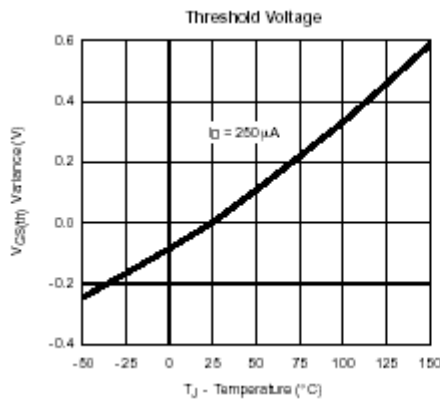
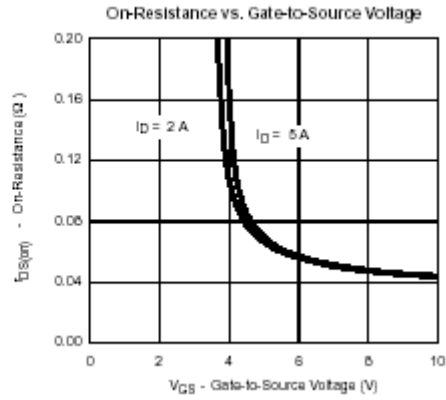
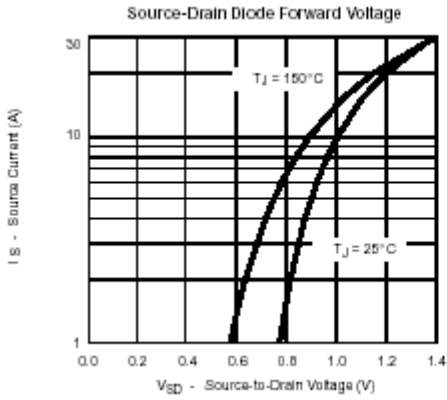
- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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Typical Electrical Characteristics (P-Channel)

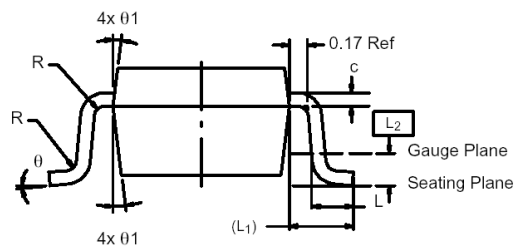
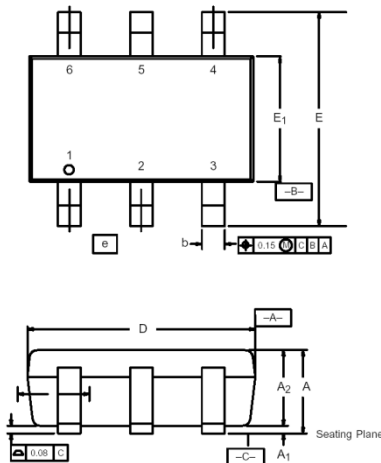


Typical Electrical Characteristics (P-Channel)



Package Information

TSOP-6: 6LEAD



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	–	1.10	0.036	–	0.043
A ₁	0.01	–	0.10	0.0004	–	0.004
A ₂	0.84	–	1.00	0.033	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
L	0.35	–	0.50	0.014	–	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	–	–	0.004	–	–
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		