

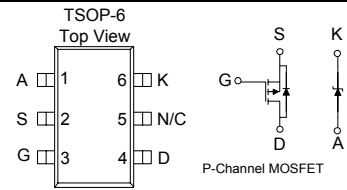
P-Channel 30-V (D-S) MOSFET With Schottky Diode

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

MOSFET PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (OHM)	I_D (A)
-26.5	0.130 @ $V_{GS} = -4.5V$	± 2.5
	0.190 @ $V_{GS} = -2.5V$	± 1.9

SCHOTTKY PRODUCT SUMMARY		
V_{KA} (V)	V_f (V) Diode Forward Voltage	I_F (A)
30	0.48V @ 1.0A	1.0



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

Parameter	Symbol	Maximum	Units	
Drain-Source Voltage (MOSFET)	V_{DS}	-26.5	V	
Reverse Voltage (Schottky)	V_{KA}	30		
Gate-Source Voltage (MOSFET)	V_{GS}	± 12		
Continuous Drain Current ($T_J=150^\circ C$) (MOSFET) ^a	I_D	$T_A=25^\circ C$	± 2.5	A
		$T_A=70^\circ C$	± 1.9	
Pulsed Drain Current (MOSFET) ^b	I_{DM}	± 10		
Continuous Source Current (MOSFET Diode Conduction) ^a	I_S	-1.6		
Average Forward Current (Schottky)	I_F	0.5		
Pulsed Forward Current (Schottky)	I_{FM}	8		
Maximum Power Dissipation (MOSFET) ^a	P_D	$T_A=25^\circ C$	1.15	
		$T_A=70^\circ C$	0.7	
Maximum Power Dissipation (Schottky) ^a	P_D	$T_A=25^\circ C$	1.0	
		$T_A=70^\circ C$	0.6	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	93	$^\circ C/W$
		Steady State	130	

Notes

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

MOSFET SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1.0			
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = +/-12 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -21 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
		$V_{DS} = -21 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-10	
On-State Drain Current ^A	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-5			A
Drain-Source On-State Resistance ^A	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -2.5 \text{ A}$			0.130	Ω
		$V_{GS} = -2.5 \text{ V}, I_D = -1.9 \text{ A}$			0.190	
Forward Transconductance ^A	g_{fs}	$V_{DS} = -5 \text{ V}, I_D = -2.5 \text{ A}$		3		S
Diode Forward Voltage	V_{SD}	$I_S = -1.6 \text{ A}, V_{GS} = 0 \text{ V}$		-0.70		V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -2.5 \text{ A}$		6.0		nC
Gate-Source Charge	Q_{gs}			0.80		
Gate-Drain Charge	Q_{gd}			1.30		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -5 \text{ V}, R_L = 5 \text{ OHM}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \text{ OHM}$		6.5		ns
Rise Time	t_r			20		
Turn-Off Delay Time	$t_{d(off)}$			31		
Fall-Time	t_f			21		

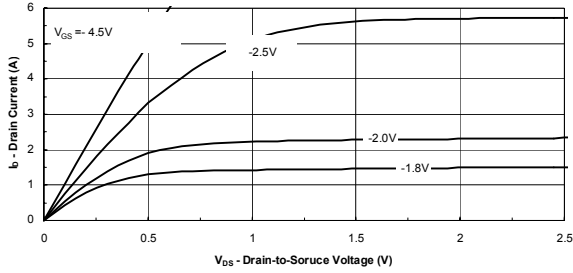
SCHOTTKY SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Forward Voltage Drop	V_F	$I_F = 0.5 \text{ A}$			0.48	V
		$I_F = 0.5 \text{ A}, T_J = 125^\circ\text{C}$			0.4	V
Maximum Reverse Leakage Current	I_{rm}	$V_r = 30 \text{ V}$			0.1	mA
		$V_r = 30 \text{ V}, T_J = 75^\circ\text{C}$			1	
		$V_r = 30 \text{ V}, T_J = 125^\circ\text{C}$			10	
Junction Capacitance	C_T	$V_r = 10 \text{ V}$		31		pF

Notes

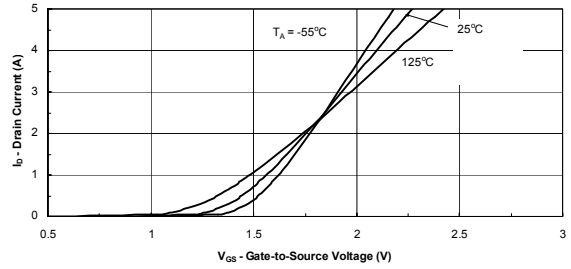
- Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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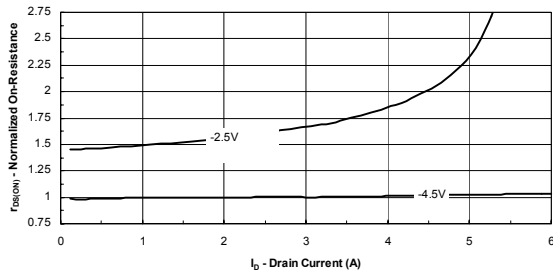
Typical Electrical Characteristics



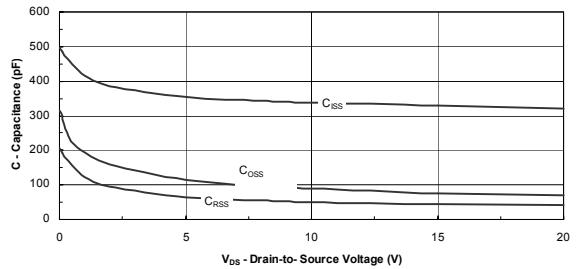
Output Characteristics



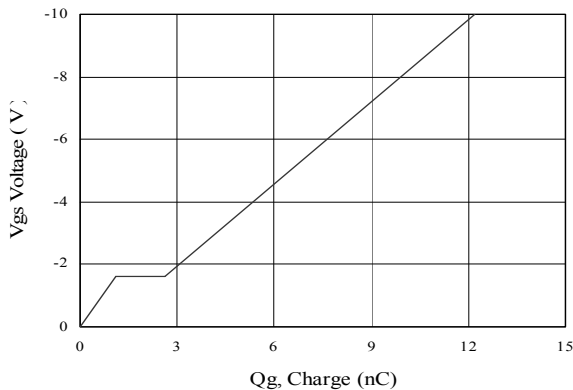
Transfer Characteristics



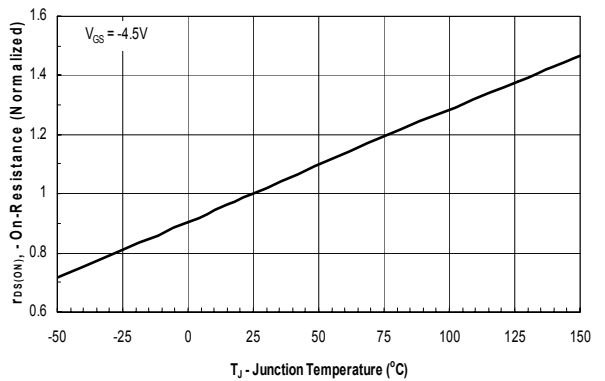
On-Resistance vs. Drain Current



Capacitance

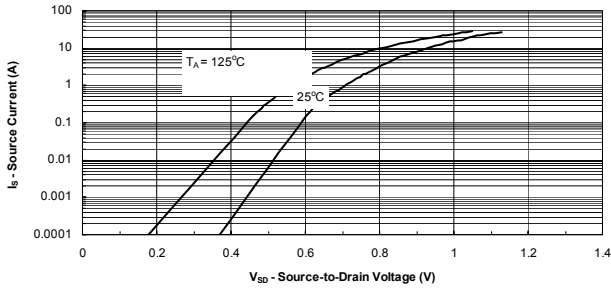


Gate Charge

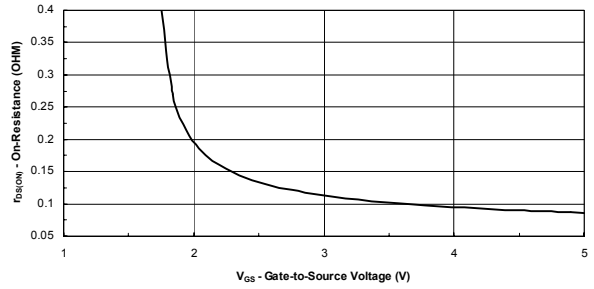


On-Resistance vs. Junction Temperature

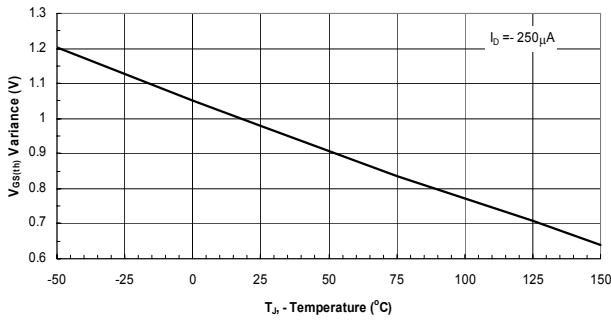
Typical Electrical Characteristics



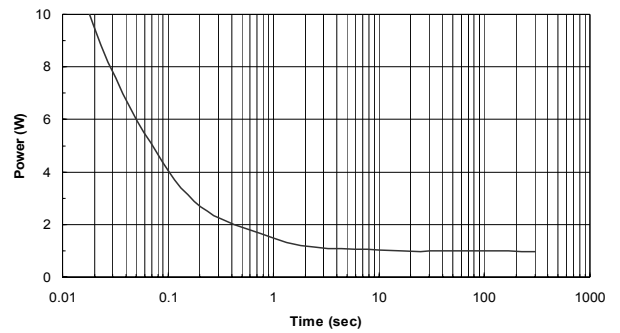
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



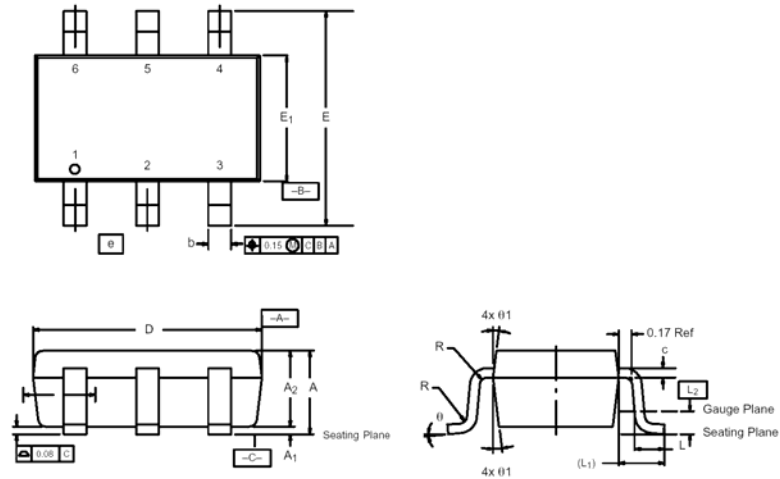
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

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	–	–
Ø	0°	4°	8°	0°	4°	8°
Ø ₁	7° Nom			7° Nom		