

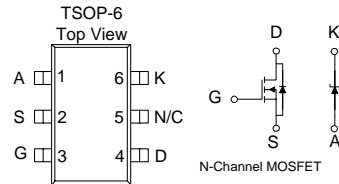
N-Channel 30-V (D-S) MOSFET With Schottky Diode

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
30	63 @ $V_{GS} = 4.5V$	3.5
	110 @ $V_{GS} = 2.5V$	3.0

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	Limit	Units
Drain-Source Voltage (MOSFET)		V_{DS}	30	V
Reverse Voltage (Schottky)		V_{KA}	30	
Gate-Source Voltage (MOSFET)		V_{GS}	± 12	
Continuous Drain Current ($T_J=150^\circ C$) (MOSFET) ^a	$T_A=25^\circ C$	I_D	± 3.5	A
	$T_A=70^\circ C$		± 2.8	
Pulsed Drain Current (MOSFET) ^b		I_{DM}	± 16	
Continuous Source Current (MOSFET Diode Conduction) ^a		I_S	1.25	
Average Forward Current (Schottky)		I_F	0.5	
Pulsed Forward Current (Schottky)		I_{FM}	8	
Maximum Power Dissipation (MOSFET) ^a	$T_A=25^\circ C$	P_D	1.3	W
	$T_A=70^\circ C$		0.8	
Maximum Power Dissipation (Schottky) ^a	$T_A=25^\circ C$		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	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	$R_{\theta JA}$	100	$^\circ C/W$
	Steady-State		166	$^\circ C/W$

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- 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 μA	0.7			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = 12 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C			25	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	6			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 3.5 A			63	mΩ
		V _{GS} = 2.5 V, I _D = 3 A			110	
Forward Transconductance ^A	g _{fs}	V _{DS} = 15 V, I _D = 3.5 A		6.9		S
Diode Forward Voltage	V _{SD}	I _S = 2.3 A, V _{GS} = 0 V		0.8		V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 3.5 A		6.3		nC
Gate-Source Charge	Q _{gs}			0.9		
Gate-Drain Charge	Q _{gd}			1.9		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 25 V, R _L = 25 Ω, I _D = 1 A, V _{GEN} = 10 V		16		nS
Rise Time	t _r			5		
Turn-Off Delay Time	t _{d(off)}			23		
Fall-Time	t _f			3		

SCHOTTKY SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Forward Voltage Drop	V _F	I _F = 0.5 A			0.48	V
		I _F = 0.5 A, T _J = 125°C			0.4	V
Maximum Reverse Leakage Current	I _{rm}	V _r = 30 V			0.1	mA
		V _r = 30 V, T _J = 75°C			1	
		V _r = 30 V, T _J = 125°C			10	
Junction Capacitance	C _T	V _r = 10 V		31		pF

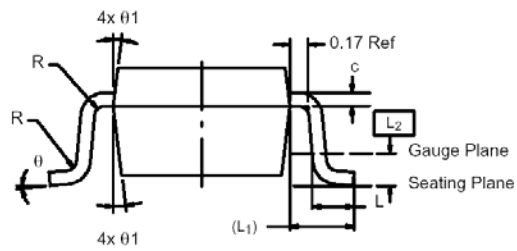
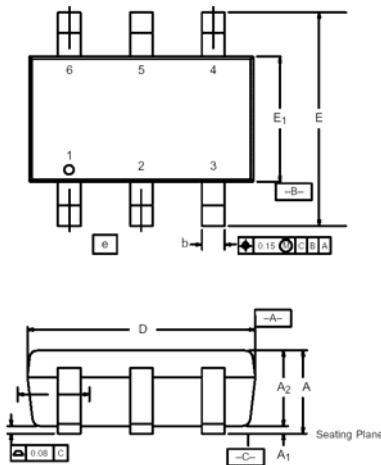
Notes

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

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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		