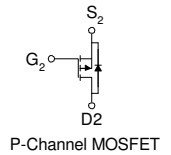
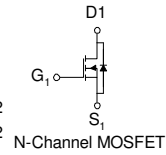
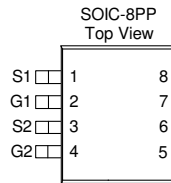


P & N-Channel 40-V (D-S) MOSFET

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, cellular and cordless telephones.

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
40	46 @ $V_{GS} = 4.5V$	7.2
	36 @ $V_{GS} = 10V$	8.1
-40	55 @ $V_{GS} = -4.5V$	-6.6
	39 @ $V_{GS} = -10V$	-7.8

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN5x6 saves board space
- Fast switching speed
- High performance trench technology



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage	V_{DS}	40	-40	V
Gate-Source Voltage	V_{GS}	20	-20	
Continuous Drain Current ^a	I_D	$T_A=25^\circ C$	8.1	A
		$T_A=70^\circ C$	6.6	
Pulsed Drain Current ^b	I_{DM}	± 20	± 20	
Continuous Source Current (Diode Conduction) ^a	I_S	2.9	-2.9	A
Power Dissipation ^a	P_D	$T_A=25^\circ C$	3.5	W
		$T_A=70^\circ C$	2.2	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	35	$^\circ C/W$
	Steady State	85	$^\circ C/W$

Notes

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

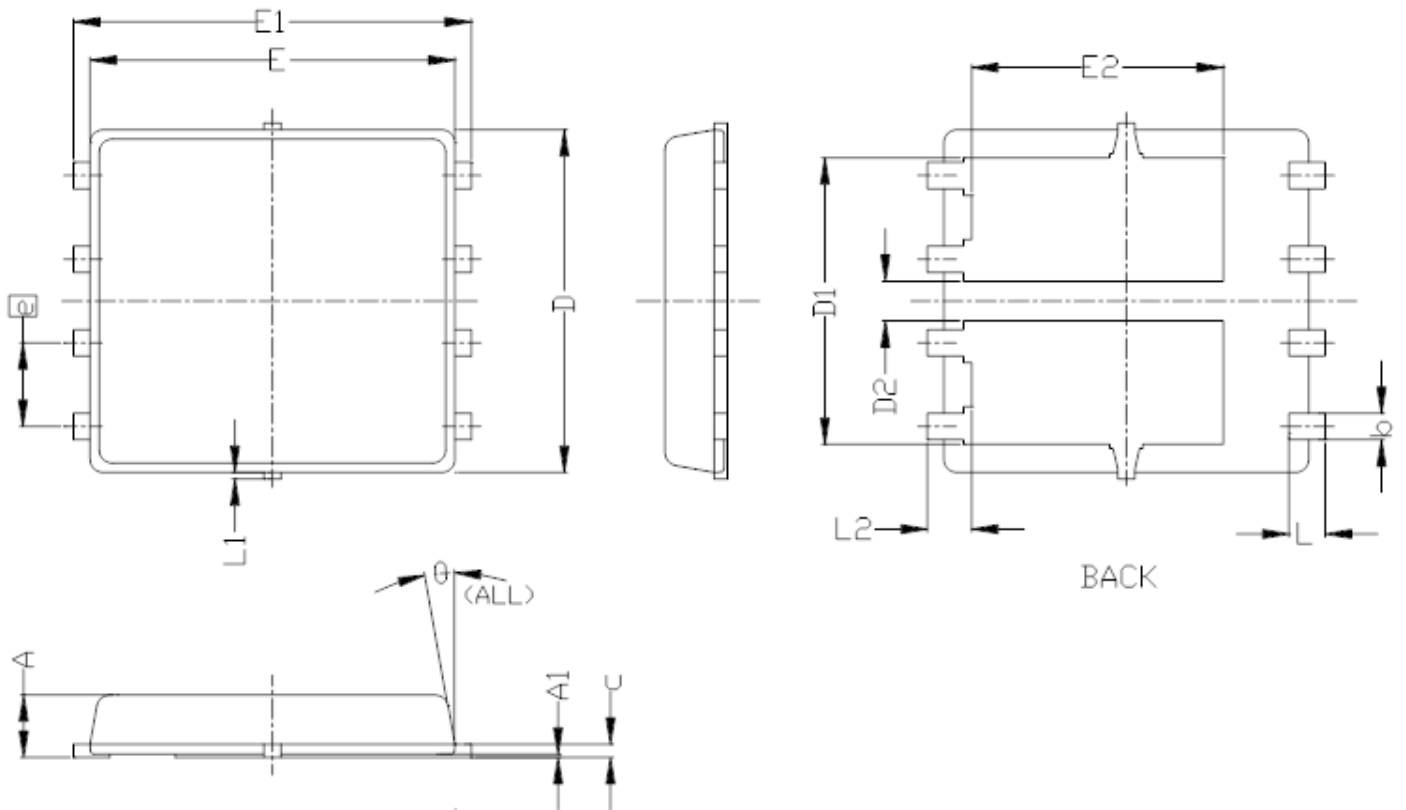
SPECIFICATIONS (T _A = 25° C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Conditions	Limits				Unit
			Ch	Min	Typ	Max	
Static							
Gate-Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250 uA	N	1			V
		V _{GS} = V _{DS} , I _D = -250 uA	P	-1			
Gate-Body Leakage	I _{GSS}	V _{GS} = -20 V, V _{DS} = 0 V	P			±100	nA
		V _{GS} = 20 V, V _{DS} = 0 V	N			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -32 V, V _{GS} = 0 V	P			-1	uA
		V _{DS} = 32 V, V _{GS} = 0 V	N			1	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	N	20			A
		V _{DS} = -5 V, V _{GS} = -10 V	P	-20			
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 10 V, I _D = 1 A	N			36	mΩ
		V _{GS} = 4.5 V, I _D = 1 A				46	
		V _{GS} = -10 V, I _D = -1 A	P			39	
		V _{GS} = -4.5 V, I _D = -1 A				59	
Forward Tranconductance ^A	g _{fs}	V _{DS} = 15 V, I _D = 1 A	N		40		S
		V _{DS} = -15 V, I _D = -1 A	P		31		
Dynamic							
Total Gate Charge	Q _g	N-Channel V _{DS} =15V, V _{GS} =4.5V, I _D =1A P-Channel V _{DS} =-15V, V _{GS} =-4.5V, I _D =-1A	N		10		nC
			P		10		
Gate-Source Charge	Q _{gs}		N		3		
			P		4		
Gate-Drain Charge	Q _{gd}		N		3		
			P		5		
Turn-On Delay Time	t _{d(on)}	N-Chaneel V _{DD} =15V, V _{GS} =10V, I _D =1A , R _{GEN} =25Ω, P-Channel V _{DD} =-15V, V _{GS} =-10V, I _D =-1A R _{GEN} =15Ω	N		3		nS
			P		3		
Rise Time	t _r		N		3		
			P		3		
Turn-Off Delay Time	t _{d(off)}		N		30		
			P		40		
Fall-Time	t _f		N		10		
			P		10		

Notes

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

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Package Information



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00	—	0.05	0.000	—	0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D1	4.35 BSC			0.171 BSC		
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	3.625 BSC			0.143 BSC		
E3	1.275 BSC			0.050 BSC		
e	1.27 BSC			0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	—	0.15	0	—	0.006
L2	0.68 REF			0.027 REF		
θ	0°	—	10°	0°	—	10°