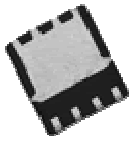
N-Channel 40-V (D-S) MOSFET

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, PCMCIA cards, cellular and cordless telephones.

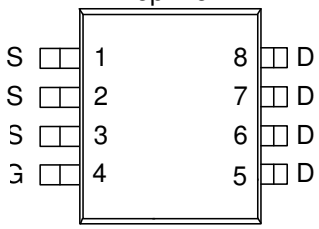
- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOIC-8PP saves board space
- Fast switching speed
- High performance trench technology

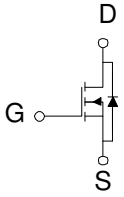
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
40	9 @ V_{GS} = 10V	20
	12 @ V_{GS} = 4.5V	17



RoHS COMPLIANT
HALOGEN FREE Available

SOIC-8PP
Top View





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Limit**	**Units**
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[a]	T_A=25°C	I_D	±20	A
	T_A=70°C		±16	A
Pulsed Drain Current[b]		I_{DM}	±50	A
Continuous Source Current (Diode Conduction)[a]		I_S	2.3	A
Power Dissipation[a]	T_A=25°C	P_D	5.0	W
	T_A=70°C		3.2	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient[a]	t <= 10 sec	$R_{\theta JA}$	25	°C/W
	Steady State		65	°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		3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = 20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 32 V, V_{GS} = 0 V			1	uA
		V_{DS} = 32 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	34			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 7.5 A			9	mΩ
		V_{GS} = 4.5 V, I_D = 7 A			12	
Forward Tranconductance[A]	g_{fs}	V_{DS} = 15 V, I_D = 7.5 A		22		S
Diode Forward Voltage	V_{SD}	I_S = 2.1 A, V_{GS} = 0 V		1.1		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 7.5 A		25		nC
Gate-Source Charge	Q_{gs}			5.1		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1MHz		2060		pF
Output Capacitance	C_{oss}			230		
Reverse Transfer Capacitance	C_{rss}			180		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 25 V, R_L = 25 Ω , I_D = 34 A, V_{GEN} = 10 V		10		nS
Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			49		
Fall-Time	t_f			18		

Notes

a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing.

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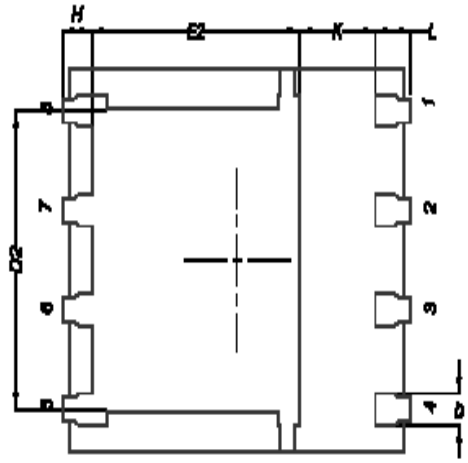
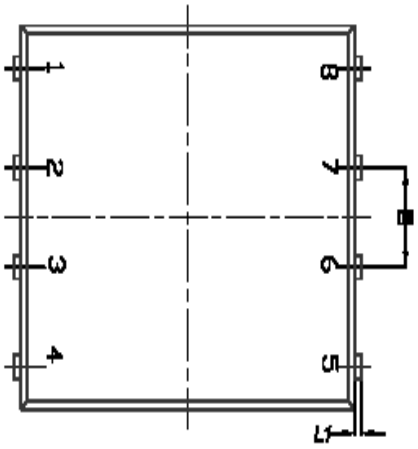
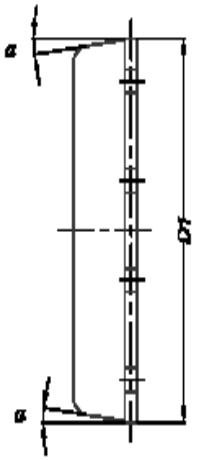
Package Information



BACKSIDE VIEW







DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.81	3.81	3.96
E	5.80	6.00	6.10
E1	3.70	3.75	3.80
E2	3.36	3.68	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°