

N-Channel 60-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:

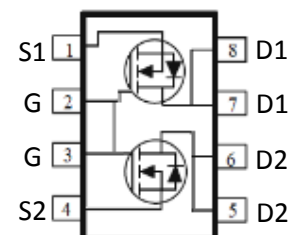
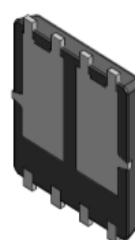
- DC/DC Conversion Circuits
- Motor Drives
- Battery Powered Power Tools

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
60	9 @ $V_{GS} = 10V$	20
	12 @ $V_{GS} = 4.5V$	17



RoHS
COMPLIANT
HALOGEN
FREE

DFN5x6-8L



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	20	A
	$T_A = 70^\circ\text{C}$		16	
Pulsed Drain Current ^b		I_{DM}	80	
Continuous Source Current (Diode Conduction) ^a		I_S	6.6	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	5	W
	$T_A = 70^\circ\text{C}$		3.2	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	25	$^\circ\text{C/W}$
	Steady State		65	

Notes

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

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48 V, V_{GS} = 0 V$			1	μA
		$V_{DS} = 48 V, V_{GS} = 0 V, T_J = 55^\circ C$			10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	30			A
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 14 A$			9	m Ω
		$V_{GS} = 4.5 V, I_D = 11 A$			12	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 V, I_D = 14 A$		16		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 3.3 A, V_{GS} = 0 V$		0.75		V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = 30 V, V_{GS} = 4.5 V,$ $I_D = 13.7 A$		33		nC
Gate-Source Charge	Q_{gs}			8.6		
Gate-Drain Charge	Q_{gd}			12		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 30 V, R_L = 2.2 \Omega,$ $I_D = 13.7 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		10		ns
Rise Time	t_r			10		
Turn-Off Delay Time	$t_{d(off)}$			100		
Fall Time	t_f			25		
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 \text{ Mhz}$		5700		pF
Output Capacitance	C_{oss}			220		
Reverse Transfer Capacitance	C_{rss}			180		

Notes

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

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