



M-MOS Semiconductor Hong Kong Limited

40 V N-Channel Enhancement-Mode MOSFET

$V_{DS} = 40\text{ V}$

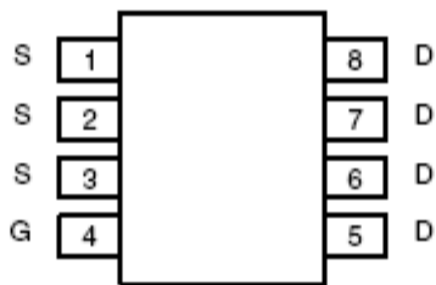
$R_{DS(ON)}, V_{GS} @ 10V, I_{ds} @ 4.3\text{ A} = 46.0\text{ m}\Omega$

$R_{DS(ON)}, V_{GS} @ 4.5V, I_{ds} @ 3.9\text{ A} = 59.0\text{ m}\Omega$

**Features**

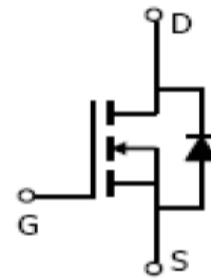
Advanced trench process technology  
 High Density Cell Design  
 General Application

SOP-8



Top View

Internal Schematic Diagram



N-Channel MOSFET

**Maximum Ratings and Thermal Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	+ 40	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current <sup>1)</sup>	$I_D$	5.38	A	
Pulsed Drain Current <sup>2)</sup>	$I_{DM}$	20.46	A	
Maximum Power Dissipation	$P_D$	$T_A = 25^\circ\text{C}$	2.00	W
		$T_A = 75^\circ\text{C}$	1.20	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$	
Junction-to-Ambient Thermal Resistance (PCB mounted) <sup>3)</sup>	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$	

Note: 1. Fused current that based on wire numbers and diameter  
 2. Repetitive Rating: Pulse width limited by the maximum junction temperature  
 3. 1-in<sup>2</sup> 2oz Cu PCB board

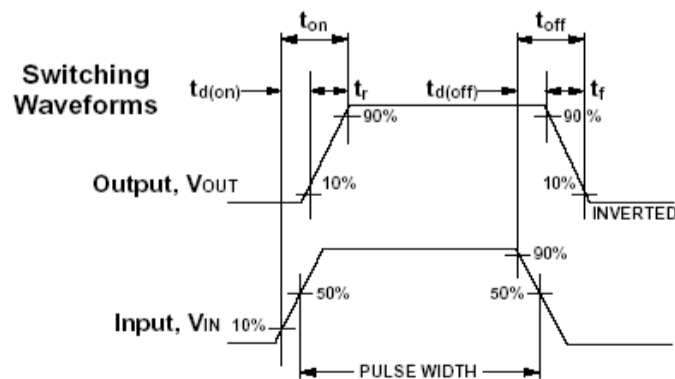
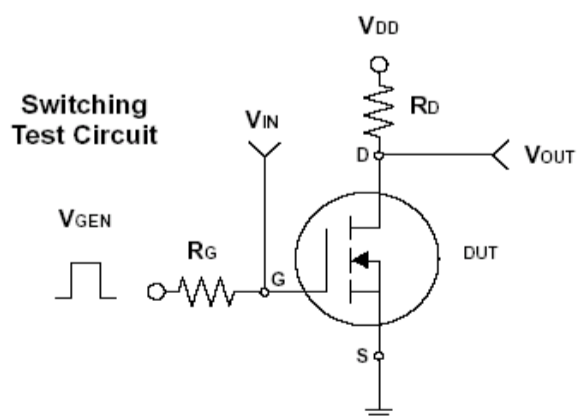


40 V N-Channel Enhancement-Mode MOSFET

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 4.3 A$		34.2	46.0	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3.9 A$		44.0	59.0	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.47	3	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -40 V, V_{GS} = 0V$			1	μA
Gate Body Leakage	$I_{GSS}$	$V_{GS} = \pm 20 V, V_{DS} = 0V$			±100	nA
<b>Dynamic<sup>3)</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 6V, I_D = 1.5A$		3.75		nC
Gate-Source Charge	$Q_{gs}$	$V_{GS} = 4.5V$		0.87		
Gate-Drain Charge	$Q_{gd}$			1.83		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 6V, I_D = 1A$		14.11		ns
Turn-On Rise Time	$t_r$	$V_{GEN} = 4.5V, R_G = 6\Omega$		8.08		
Turn-Off Delay Time	$t_{d(off)}$			19.75		
Turn-Off Fall Time	$t_f$			6.55		
Input Capacitance	$C_{iss}$	$V_{DS} = 6V, V_{GS} = 0V$		462.00		pF
Output Capacitance	$C_{oss}$	$f = 200KHz$		67.00		
Reverse Transfer Capacitance	$C_{rss}$			49.00		
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	$I_S$					A
Diode Forward Voltage	$V_{SD}$	$I_S = 1.6A, V_{GS} = 0V$				V

Note: Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%  
 3. Guaranteed by design; not subject to production testing





## Disclaimer Notice

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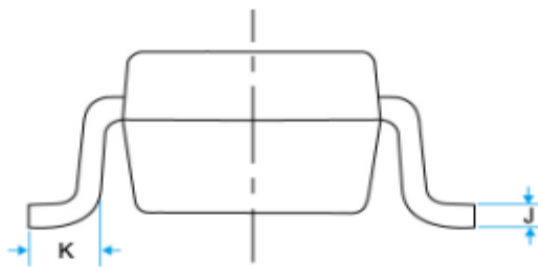
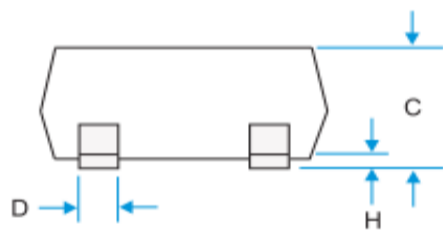
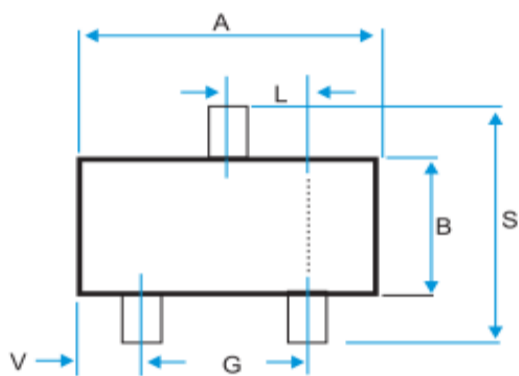
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**40 V P-Channel Enhancement-Mode MOSFET**

**SOT-23 Package Outline**



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	2.800	3.00
B	1.200	1.70
C	0.900	1.30
D	0.350	0.50
G	1.780	2.04
H	0.010	0.15
J	0.085	0.20
K	0.300	0.65
L	0.890	1.02
S	2.100	3.00
V	0.450	0.60