



## 20V N-Channel Enhancement-Mode MOSFET

$V_{DS} = 20V$ ,  $I_D = 6.0A$

$R_{DS(ON)}$ ,  $V_{GS}@2.5V$ ,  $I_{DS}@5.2A = 30m\Omega$

$R_{DS(ON)}$ ,  $V_{GS}@4.5V$ ,  $I_{DS}@6A = 20m\Omega$

### Features

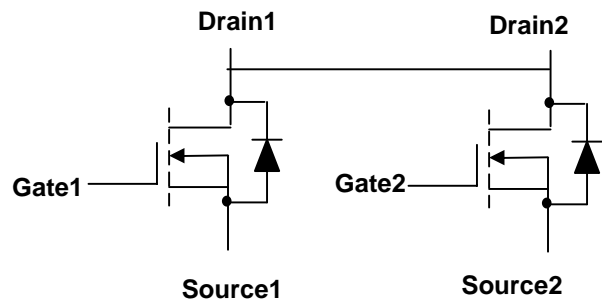
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- High Power and Current handling capability
- Fully Characterized Avalanche Voltage and Current
- Ideal for Li ion battery pack applications

TSSOP-08



Top View

Internal Schematic Diagram



N-Channel MOSFET

### Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$		
Continuous Drain Current	$I_D$	6	A	
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	30		
Maximum Power Dissipation	$P_D$	$T_A = 25^\circ C$	2.0	W
		$T_A = 75^\circ C$	1.3	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ C$	
Junction-to-Ambient Thermal Resistance (PCB mounted) <sup>2)</sup>	$R_{\theta JA}$	62.5	$^\circ C/W$	

Note: 1. Maximum DC current limited by the package  
 2. 1-in<sup>2</sup> 2oz Cu PCB board

## N-Channel Enhancement-Mode MOSFET ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 500\mu A$	20	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 2.5V, I_D = 5.2A$		24	30	m $\Omega$
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 6A$		17	20	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 500\mu A$	0.6			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$			1	$\mu A$
Gate Body Leakage	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
Gate Resistance	$R_g$					
Forward Transconductance	$g_{fs}$	$V_{DS} = 10V, I_D = 6A$	7	13		S
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 10V, I_D = 6A$ $V_{GS} = 4.5V$		7.53		nC
Gate-Source Charge	$Q_{gs}$			1.43		
Gate-Drain Charge	$Q_{gd}$			2.17		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V,$ $I_D = 1A, V_{GEN} = 4.5V$ $R_G = 6\Omega$		12.56		ns
Turn-On Rise Time	$t_r$			15.43		
Turn-Off Delay Time	$t_{d(off)}$			33.87		
Turn-Off Fall Time	$t_f$			8.29		
Input Capacitance	$C_{iss}$	$V_{DS} = 8V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$		871.1		pF
Output Capacitance	$C_{oss}$			164.3		
Reverse Transfer Capacitance	$C_{rss}$			116.25		
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	$I_S$				1.7	A
Diode Forward Voltage	$V_{SD}$	$I_S = 1.7A, V_{GS} = 0V$			1.2	V

Note: Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

