

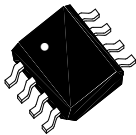
## N-Channel Enhancement-Mode MOSFET (30V, 10A)

### PRODUCT SUMMARY

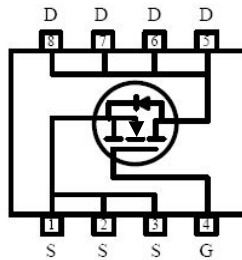
$V_{DS}$	$I_D$	$R_{DS(on)}$ (m-ohm) Max
30V	10A	13.5 @ $V_{GS} = 10V, I_D = 10A$
		20 @ $V_{GS} = 4.5V, I_D = 5A$

### Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Lead free product is acquired
- Surface mount Package



**SOP-8**



Pin 1 / 2 / 3: Source  
Pin 4: Gate  
Pin 5 / 6 / 7 / 8: Drain

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current @ $T_A = 25^\circ\text{C}$	10	A
$I_{DM}$	Drain Current (Pulsed) <sup>a</sup>	50	A
$P_D$	Total Power Dissipation @ $T_A = 25^\circ\text{C}$	2.5	W
$T_j, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	50	$^\circ\text{C/W}$

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in<sup>2</sup> 2oz Cu PCB board

**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>• Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$	-	-	50	nA
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>• On Characteristics<sup>c</sup></b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	-	-	13.5	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	-	-	20	
$g_{FS}$	Forward Transconductance	$V_{DS}=10V, I_D=9A$	-	9	-	S
<b>• Dynamic Characteristics<sup>d</sup></b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	-	710	1350	pF
$C_{oss}$	Output Capacitance		-	155	-	
$C_{rss}$	Reverse Transfer Capacitance		-	145	-	
$R_g$	Gate resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	2	3	$\Omega$
<b>• Switching Characteristics<sup>d</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS}=20V, I_D=9A, V_{GS}=4.5V$	-	8		nC
$Q_{gs}$	Gate-Source Charge		-	3.3	-	
$Q_{gd}$	Gate-Drain Charge		-	2.7	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=15V, I_D=9A, R_L=15\Omega, R_{GEN}=3.3\Omega$	-	7	-	nS
$t_r$	Turn-on Rise Time		-	7	-	
$t_{d(off)}$	Turn-off Delay Time		-	22	-	
$t_f$	Turn-off Fall Time		-	7	-	
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=9A, di/dt=100A/\mu S$	-	24	-	nS
$Q_{rr}$	Body Diode Reverse Recovery Charge	$I_F=9A, di/dt=100A/\mu S$	-	14	-	nC
<b>• Drain-Source Diode Characteristics</b>						
$V_{SD}$	Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=2.1A$	-	-	1.2	V

Note: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

## Characteristics Curve

