

RoHS Compliant Product  
A suffix of "-C" specifies halogen free

## DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high device also offers a drain-to-source diode fast recovery time. Designed for high voltage, high speed switching applications such as power supplies, converters power motor control and bridge circuits.

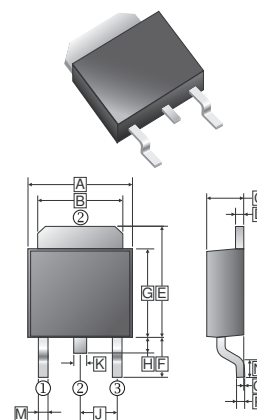
## FEATURES

- High Current Rating
- Lower  $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter VSD Specifications
- Avalanche Energy Specified

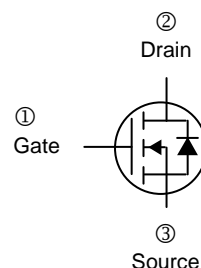
## PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

TO-252



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.186	2.386
B	4.95	5.50	K	0.64	1.14
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90	REF	P	0.58	REF.
G	5.40	6.40			
H	0.60	1.20			



## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	650	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	1	A
Pulsed Drain Current	$I_{DM}$	4	A
Single Pulsed Avalanche Energy <sup>1</sup>	$E_{AS}$	5	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$
Maximum Lead Temperature for Soldering Purposes @ 1/8" from case for 5 seconds	$T_L$	260	$^\circ\text{C}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	650	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	-	-	1.5	V	$V_{GS}=0, I_S=1\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	100	$\mu\text{A}$	$V_{DS}=600\text{V}, V_{GS}=0$
Gate-Body Leakage Current <sup>2</sup>	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0\text{V}, V_{GS}= \pm 20\text{V}$
<b>On Characteristics <sup>2</sup></b>						
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	14	$\Omega$	$V_{GS}=10\text{V}, I_D=0.6\text{A}$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	-	210	-	pF	$V_{DS}=25\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	28	-		
Reverse Transfer Capacitance	$C_{rss}$	-	4.2	-		
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	-	5	-	nC	$V_{DS}=480\text{V}$ $V_{GS}=10\text{V}$ $I_D=4\text{A}$
Gate-Source Charge	$Q_{gs}$	-	2.7	-		
Gate-Drain Charge	$Q_{gd}$	-	2	-		
Turn-on Delay Time	$T_{d(on)}$	-	8	-	nS	$V_{DD}=300\text{V}$ $V_{GS}=10\text{V}$ $R_G=18\Omega$ $I_D=1\text{A}$
Rise Time	$T_r$	-	21	-		
Turn-off Delay Time	$T_{d(off)}$	-	18	-		
Fall Time	$T_f$	-	24	-		

Notes:

1.  $E_{AS}$  condition:  $L=10\text{mH}, I_L=1\text{A}, V_{DD}=50\text{V}, V_{GS}=10\text{V}, R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$ .
2. Pulse test : Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

**CHARACTERISTIC CURVES**

