

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

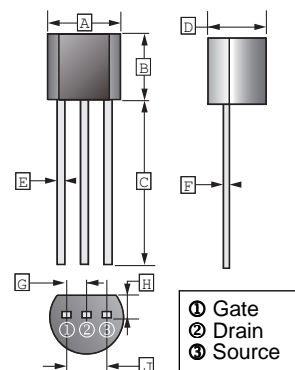
DESCRIPTION

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition, this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes. The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls, these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

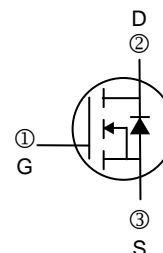
FEATURES

- Robust High Voltage Termination
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- Diode is Characterized for Use in Bridge Circuits
- I_{DSS} and $V_{DS(on)}$ Specified at Elevated Temperature

TO-92



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.70	F	0.30	0.51
B	4.30	4.70	G	1.27 TYP.	
C	12.70	-	H	1.10	1.40
D	3.30	3.81	J	2.42	2.66
E	0.36	0.56	K	0.36	0.76



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}	± 20	V
Continuous Drain Current	I_D	1	A
Pulsed Drain Current	I_{DM}	4	A
Power Dissipation	P_D	0.625	W
Single Pulsed Avalanche Energy ¹	E_{AS}	5	mJ
Thermal Resistance Junction-Ambient(Max).	$R_{\theta JA}$	200	$^{\circ}\text{C} / \text{W}$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	260	$^{\circ}\text{C}$
Operating Junction & Storage Temperature	T_J, T_{STG}	150, -50~150	$^{\circ}\text{C}$

Notes:

1. E_{AS} condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $L=10\text{mH}$, $I_L=1\text{A}$, $R_G=25\Omega$.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	650	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate Threshold Voltage ¹	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Gate-Source Leakage Current ¹	I_{GSS}	-	-	± 100	nA	$V_{DS}=0, V_{GS}= \pm 20\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	100	μA	$V_{DS}=600\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	14	Ω	$V_{GS}=10\text{V}, I_D=0.6\text{A}$
Forward On Voltage ¹	V_{SD}	-	-	1.5	V	$I_S=1\text{A}, V_{GS}=0$
Dynamic characteristics ²						
Input Capacitance	C_{ISS}	-	210	-	pF	$V_{GS}=0$ $V_{DS}=25\text{V}$ $f=1.0\text{ MHz}$
Output Capacitance	C_{OSS}	-	28	-		
Reverse Transfer Capacitance	C_{RSS}	-	4.2	-		
Switching characteristics ²						
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	$V_{DD}=300\text{V}$ $I_D=1\text{A}$ $V_{GS}=10\text{V}$ $R_G=18\Omega$
Rise Time	T_r	-	21	-		
Turn-off Delay Time	$T_{d(off)}$	-	18	-		
Fall Time	T_f	-	24	-		

Notes:

1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. These parameters have no way to verify.