

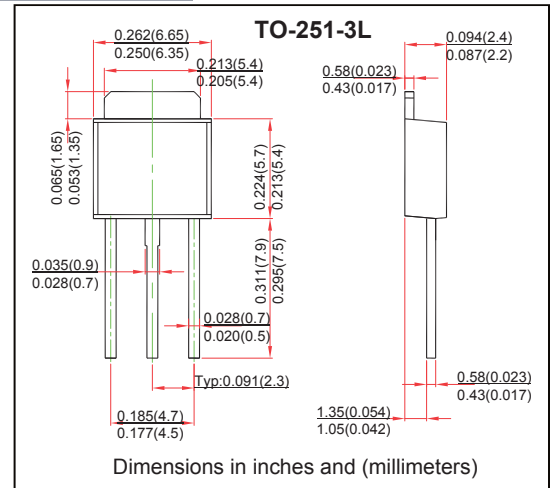
## TO-251-3L Plastic-Encapsulate MOSFETS

### FEATURE

- 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
- IDSS and VDS(on) Specified at Elevated Temperature
- N-Channel Power MOSFET

### MECHANICAL DATA

- Case style: TO-251-3L molded plastic
- Mounting position: any



### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	600	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current	$I_D$	2	A
Pulsed Drain Current	$I_{DM}$	8	
Single Pulsed Avalanche Energy*	$E_{AS}$	128	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	°C/W
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{stg}$	-50 ~ +150	

\* $E_{AS}$  condition:  $T_J=25^\circ\text{C}$ ,  $V_{DD}=50\text{V}$ ,  $L=64\text{mH}$ ,  $I_{AS}=2\text{A}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}$ , $I_D=250\mu\text{A}$	600			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=600\text{V}$ , $V_{GS}=0\text{V}$			25	$\mu\text{A}$
		$V_{DS}=480\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=125^\circ\text{C}$			100	
Gate-body leakage current	$I_{GSS}$	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
<b>On characteristics (note 1)</b>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	2.0		4.0	V
Static drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ , $I_D=1\text{A}$		3.6	4.4	$\Omega$
Forward transconductance	$g_{fs}$	$V_{DS}=50\text{V}$ , $I_D=1\text{A}$	1			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	$C_{iss}$	$V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$		435		$\text{pF}$
Output capacitance	$C_{oss}$			56		
Reverse transfer capacitance	$C_{rss}$			9.2		
<b>Switching characteristics (note 2)</b>						
Total gate charge	$Q_g$	$V_{DS}=480\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=2.4\text{A}$		40	50	nC
Gate-source charge	$Q_{gs}$			4.2		
Gate-drain charge	$Q_{gd}$			8.4		
Turn-on delay time	$t_{d(on)}$	$V_{DD}=300\text{V}$ , $I_D=2\text{A}$ , $V_{GS}=10\text{V}$ , $R_G=18\Omega$		12		ns
Turn-on rise time	$t_r$			21		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	$t_f$			24		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note 1)	$V_{SD}$	$V_{GS}=0\text{V}$ , $I_S=2\text{A}$			1.6	V
Continuous drain-source diode forward current	$I_S$				2	A
Pulsed drain-source diode forward current	$I_{SM}$				8	A

Notes:

1. Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production.

## ■ Typical Characteristics

