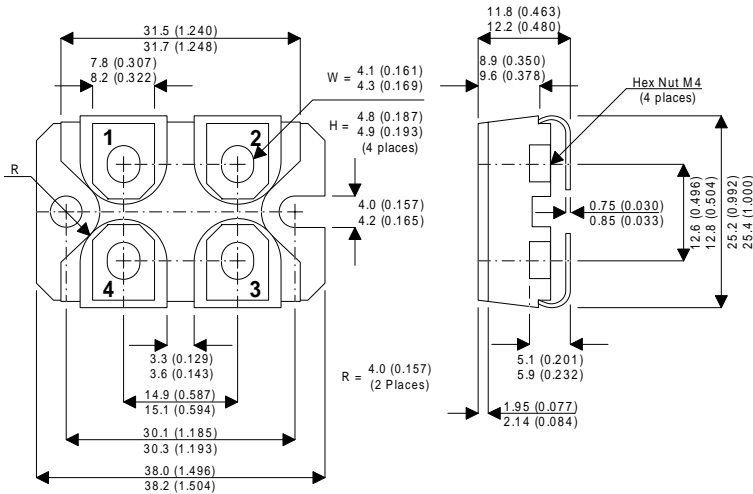


SOT-227 Package Outline.  
Dimensions in mm (inches)



## 4TH GENERATION MOSFET

**N-CHANNEL  
ENHANCEMENT MODE  
HIGH VOLTAGE  
ISOLATED  
POWER MOSFETS**

**$V_{DSS}$  500V**  
 **$I_{D(cont)}$  48A**  
 **$R_{DS(on)}$  0.10 $\Omega$**

**Terminal 1** Source 2\*    **Terminal 2** Drain  
**Terminal 3** Gate        **Terminal 4** Source 1

\* Source 2 may be omitted, shorted to Source 1 or used for Gate drive circuit.

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

$V_{DSS}$	Drain – Source Voltage	500	V
$I_D$	Continuous Drain Current	48	A
$I_{DM}, I_{LM}$	Pulsed Drain Current <sup>1</sup> and Inductive Current Clamped	192	A
$V_{GS}$	Gate – Source Voltage	$\pm 30$	V
$P_D$	Total Power Dissipation @ $T_{case} = 25^{\circ}C$	520	W
	Linear Derating Factor	4.16	W / $^{\circ}C$
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to 150	$^{\circ}C$
$T_L$	Lead Temperature : 0.063" from Case for 10 Sec.	300	

### STATIC ELECTRICAL RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	500			V
$I_{D(ON)}$	On State Drain Current <sup>2</sup>	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max $V_{GS} = 10V$	48			A
$R_{DS(ON)}$	Drain – Source On State Resistance <sup>2</sup>	$V_{GS} = 10V, I_D = 0.5 I_D [Cont.]$			0.10	$\Omega$
$I_{DSS}$	Zero Gate Voltage Drain Current ( $V_{GS} = 0V$ )	$V_{DS} = V_{DSS}$			250	$\mu A$
		$V_{DS} = 0.8V_{DSS}, T_C = 125^{\circ}C$			1000	
$I_{GSS}$	Gate – Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$			$\pm 100$	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 2.5mA$	2		4	V

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380 $\mu S$ , Duty Cycle < 2%

**DYNAMIC CHARACTERISTICS**

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
$C_{iss}$	Input Capacitance	$V_{GS} = 0V$		5570	6500	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25V$		1170	1640	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1MHz$		440	660	
$Q_g$	Total Gate Charge <sup>3</sup>	$V_{GS} = 10V$		240	370	nC
$Q_{gs}$	Gate – Source Charge	$V_{DD} = 0.5 V_{DSS}$		32	48	
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$I_D = I_D [Cont.] @ 25^\circ C$		116	170	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$		15	30	ns
$t_r$	Rise Time	$V_{DD} = 0.5 V_{DSS}$		25	50	
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_D [Cont.] @ 25^\circ C$		48	75	
$t_f$	Fall Time	$R_G = 0.6\Omega$		12	25	

**SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS**

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current (Body Diode)				48	A
$I_{SM}$	Pulsed Source Current <sup>1</sup> (Body Diode)				192	
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS} = 0V, I_S = -I_D [Cont.]$			1.8	V
$t_{rr}$	Reverse Recovery Time	$I_S = -I_D [Cont.]$	210	415	830	ns
$Q_{rr}$	Reverse Recovery Charge	$di_S / dt = 100A/\mu s$	4	8.3	16	$\mu C$

**PACKAGE CHARACTERISTICS**

	Characteristic	Min.	Typ.	Max.	Unit
$L_D$	Internal Drain Inductance (Measured From Drain Terminal to Centre of Die)		3		nH
$L_S$	Internal Source Inductance (Measured From Source Terminals to Source Bond Pads)		5		
$V_{Isolation}$	RMS Voltage (50–60 Hz Sinusoidal Waveform From Terminals to Mounting Base for 1 Min.)	2500			V
$C_{Isolation}$	Drain-to-Mounting Base Capacitance		35		pF
Torque	Maximum Torque for Device Mounting Screws and Electrical Terminations			13	in-lbs

**THERMAL CHARACTERISTICS**

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.24	$^\circ C/W$
$R_{\theta CS}$	Case to Sink (Use High Efficiency Thermal Joint Compound and Planar Heat Sink Surface.)			0.05	

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380 $\mu s$ , Duty Cycle < 2%

3) See MIL–STD–750 Method 3471



CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.