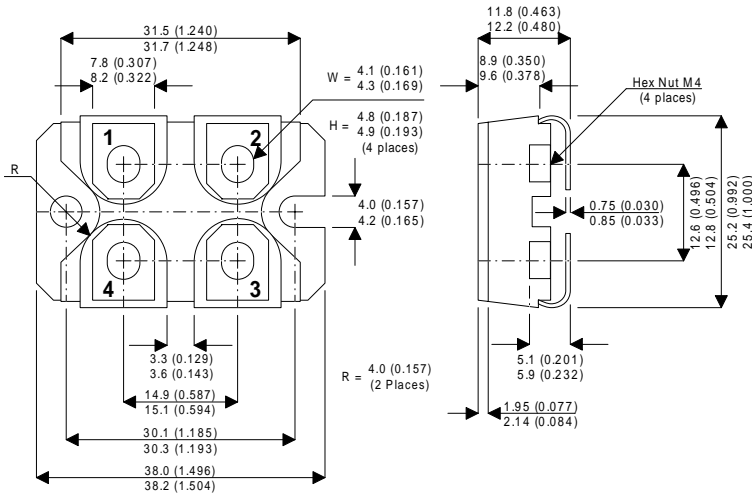


# 4TH GENERATION MOSFET

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



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

**V<sub>DSS</sub>            500V**  
**I<sub>D(cont)</sub>        71A**  
**R<sub>DS(on)</sub>       0.060Ω**

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

\* Source terminals are shorted internally. Current handling capability is equal for either Source terminal.

**ABSOLUTE MAXIMUM RATINGS** (T<sub>case</sub> = 25°C unless otherwise stated)

V <sub>DSS</sub>	Drain – Source Voltage	500	V
I <sub>D</sub>	Continuous Drain Current	71	A
I <sub>DM</sub> , I <sub>LM</sub>	Pulsed Drain Current <sup>1</sup> and Inductive Current Clamped	284	A
V <sub>GS</sub>	Gate – Source Voltage	±30	V
P <sub>D</sub>	Total Power Dissipation @ T <sub>case</sub> = 25°C	690	W
	Linear Derating Factor	5.52	W / °C
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-40 to 150	°C
T <sub>L</sub>	Lead Temperature : 0.063" from Case for 10 Sec.	300	

**STATIC ELECTRICAL RATINGS** (T<sub>case</sub> = 25°C unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	V <sub>GS</sub> = 0V , I <sub>D</sub> = 250μA	500			V
I <sub>D(ON)</sub>	On State Drain Current <sup>2</sup>	V <sub>DS</sub> > I <sub>D(ON)</sub> × R <sub>DS(ON)</sub> Max V <sub>GS</sub> = 10V	71			A
R <sub>DS(ON)</sub>	Drain – Source On State Resistance <sup>2</sup>	V <sub>GS</sub> = 10V , I <sub>D</sub> = 0.5 I <sub>D</sub> [Cont.]			0.060	Ω
I <sub>DSS</sub>	Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0V)	V <sub>DS</sub> = V <sub>DSS</sub>			250	μA
		V <sub>DS</sub> = 0.8V <sub>DSS</sub> , T <sub>C</sub> = 125°C			1000	
I <sub>GSS</sub>	Gate – Source Leakage Current	V <sub>GS</sub> = ±30V , V <sub>DS</sub> = 0V			±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 5.0mA	2		4	V

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

2) Pulse Test: Pulse Width < 380μS , Duty Cycle < 2%

**DYNAMIC CHARACTERISTICS**

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
$C_{iss}$	Input Capacitance	$V_{GS} = 0V$		11640	14000	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25V$		2230	3120	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1MHz$		800	1200	
$Q_g$	Total Gate Charge <sup>3</sup>	$V_{GS} = 10V$		475	710	nC
$Q_{gs}$	Gate – Source Charge	$V_{DD} = 0.5 V_{DSS}$		68	100	
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$I_D = I_D [Cont.] @ 25^\circ C$		246	370	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$		22	45	ns
$t_r$	Rise Time	$V_{DD} = 0.5 V_{DSS}$		30	60	
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_D [Cont.] @ 25^\circ C$		66	100	
$t_f$	Fall Time	$R_G = 0.6\Omega$		13	25	

**SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS**

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current (Body Diode)				71	A
$I_{SM}$	Pulsed Source Current <sup>1</sup> (Body Diode)				284	
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS} = 0V, I_S = -I_D [Cont.]$			1.8	V
$t_{rr}$	Reverse Recovery Time	$I_S = -I_D [Cont.]$	325	650	1300	ns
$Q_{rr}$	Reverse Recovery Charge	$di_S / dt = 100A/\mu s$	10	19	38	$\mu C$

**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		70		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			0.18	$^\circ C/W$
$R_{\theta CS}$	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.