

4TH GENERATION MOSFET

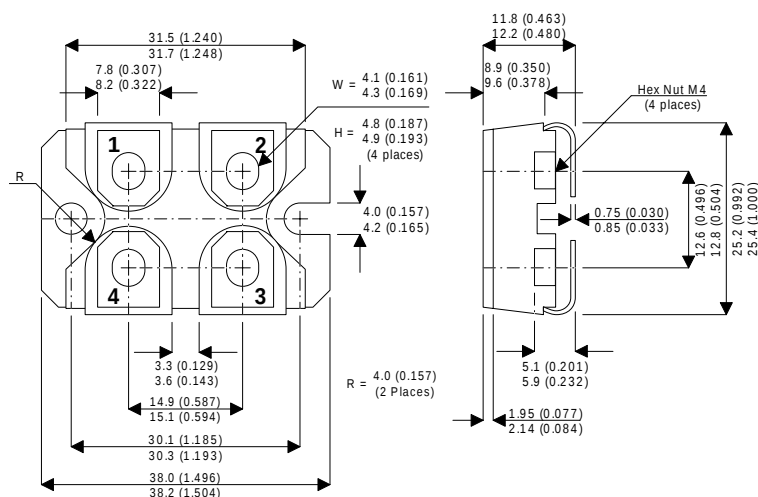
N-CHANNEL ENHANCEMENT MODE HIGH VOLTAGE ISOLATED POWER MOSFETS

V_{DSS} 600V

I_{D(cont)} 38A

R_{DS(on)} 0.15Ω

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



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	600	V
I _D	Continuous Drain Current	38	A
I _{DM} , I _{LM}	Pulsed Drain Current ¹ and Inductive Current Clamped	152	A
V _{GS}	Gate – Source Voltage	±30	V
P _D	Total Power Dissipation @ T _{case} = 25°C	520	W
	Linear Derating Factor	4.16	W / °C
T _J , T _{STG}	Operating and Storage Junction Temperature Range	–55 to 150	°C
T _L	Lead Temperature : 0.063” from Case for 10 Sec.	300	

STATIC ELECTRICAL RATINGS (T_{case} = 25°C unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
V_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0V$, $I_D = 250\mu A$	600			V
$I_{D(ON)}$	On State Drain Current ²	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max $V_{GS} = 10V$	38			A
$R_{DS(ON)}$	Drain – Source On State Resistance ²	$V_{GS} = 10V$, $I_D = 0.5 I_D$ [Cont.]			0.15	Ω
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0V$)	$V_{DS} = V_{DSS}$			250	μA
		$V_{DS} = 0.8V_{DSS}$, $T_C = 125^\circ C$			1000	
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 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 $< 380\mu\text{S}$, Duty Cycle $< 2\%$

DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$		5540	6500	pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		1025	1450	
C_{rss}	Reverse Transfer Capacitance	$f = 1MHz$		375	570	
Q_g	Total Gate Charge ³	$V_{GS} = 10V$		242	370	nC
Q_{gs}	Gate – Source Charge	$V_{DD} = 0.5 V_{DSS}$		30	45	
Q_{gd}	Gate – Drain (“Miller”) Charge	$I_D = I_D [Cont.] @ 25^\circ C$		118	175	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$		15	30	ns
t_r	Rise Time	$V_{DD} = 0.5 V_{DSS}$		24	48	
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_D [Cont.] @ 25^\circ C$		46	75	
t_f	Fall Time	$R_G = 0.6\Omega$		13	26	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (Body Diode)				38	A
I_{SM}	Pulsed Source Current ¹ (Body Diode)				152	
V_{SD}	Diode Forward Voltage ²	$V_{GS} = 0V, I_S = -I_D [Cont.]$			1.8	V
t_{rr}	Reverse Recovery Time	$I_S = -I_D [Cont.]$	330	660	1200	ns
Q_{rr}	Reverse Recovery Charge	$dl_S / dt = 100A/\mu s$	6	12	24	μC

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	$f = 1MHz$	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 μs , Duty Cycle < 2%

3) See MIL–STD–750 Method 3471



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