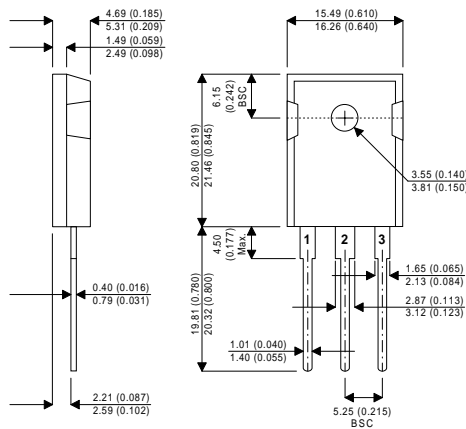


4TH GENERATION MOSFET

TO247-AD Package Outline.
Dimensions in mm (inches)



Pin 1 – Gate Pin 2 – Drain Pin 3 – Source

N-CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

V_{DSS} **500V**
I_{D(cont)} **28.0A**
R_{DS(on)} **0.20Ω**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V _{DSS}	Drain – Source Voltage	500	V
I _D	Continuous Drain Current	28	A
I _{DM}	Pulsed Drain Current ¹	112	A
V _{GS}	Gate – Source Voltage	±30	V
P _D	Total Power Dissipation @ T _{case} = 25°C	360	W
	Derate Linearly	2.9	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
BV _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0V , I _D = 250μA	500			V
I _{DSS}	Zero Gate Voltage Drain Current (V _{GS} = 0V)	V _{DS} = V _{DSS}			250	μA
		V _{DS} = 0.8V _{DSS} , T _C = 125°C			1000	
I _{GSS}	Gate – Source Leakage Current	V _{GS} = ±30V , V _{DS} = 0V			±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 1.0mA	2		4	V
I _{D(ON)}	On State Drain Current ²	V _{DS} > I _{D(ON)} × R _{DS(ON)} Max V _{GS} = 10V	28			A
R _{DS(ON)}	Drain – Source On State Resistance ²	V _{GS} = 10V , I _D = 0.5 I _D [Cont.]			0.20	Ω

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	$V_{GS} = 0V$		2890	3500	pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		590	830	
C_{rss}	Reverse Transfer Capacitance	$f = 1MHz$		230	350	
Q_g	Total Gate Charge ³	$V_{GS} = 10V$		140	210	nC
Q_{gs}	Gate – Source Charge	$V_{DD} = 0.5 V_{DSS}$		18	27	
Q_{gd}	Gate – Drain (“Miller”) Charge	$I_D = I_D [Cont.] @ 25^\circ C$		75	110	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$		19	38	ns
t_r	Rise Time	$V_{DD} = 0.5 V_{DSS}$		43	86	
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_D [Cont.] @ 25^\circ C$		85	125	
t_f	Fall Time	$R_G = 1.8\Omega$		56	112	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	(Body Diode)			28	A
I_{SM}	Pulsed Source Current ¹	(Body Diode)			112	
V_{SD}	Diode Forward Voltage ²	$V_{GS} = 0V, I_S = -I_D [Cont.]$			1.3	V
t_{rr}	Reverse Recovery Time	$I_S = -I_D [Cont.], di_s / dt = 100A/\mu s$	215	430	860	ns
Q_{rr}	Reverse Recovery Charge	$I_S = -I_D [Cont.], di_s / dt = 100A/\mu s$	3	7	14	μC

SAFE OPERATING AREA CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
SOA1	Safe Operating Area	$V_{DS} = 0.4V_{DSS}, t = 1 \text{ Sec.}$ $I_{DS} = P_D / 0.4V_{DSS}$	360			W
SOA2	Safe Operating Area	$V_{DS} = P_D / I_D [Cont.]$ $I_{DS} = I_D [Cont.], t = 1 \text{ Sec.}$	360			W
I_{LM}	Inductive Current Clamped		112			A

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.34	$^\circ C/W$
$R_{\theta JA}$	Junction to Ambient			40	

- 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.