

# **Standard Power MOSFET**

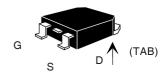
P-Channel Enhancement Mode Avalanche Rated IXTH 11P50 IXTT 11P50  $V_{DSS} = -500 \text{ V}$   $I_{D25} = -11 \text{ A}$   $R_{DS(on)} = 0.75 \Omega$ 



Symbol	<b>Test Conditions</b>	Maximum	Ratings
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	-500	V
$\mathbf{V}_{\mathtt{DGR}}$	$T_{_{\rm J}}$ = 25°C to 150°C; $R_{_{\rm GS}}$ = 1 $M\Omega$	-500	V
V <sub>GS</sub>	Continuous	±20	V
$\mathbf{V}_{GSM}$	Transient	±30	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	-11	Α
I <sub>DM</sub>	$T_{\rm c}$ = 25°C, pulse width limited by $T_{\rm J}$	-44	Α
I <sub>AR</sub>	$T_{c} = 25^{\circ}C$	-11	Α
E <sub>AR</sub>	T <sub>C</sub> = 25°C	30	mJ
$P_{D}$	T <sub>C</sub> = 25°C	300	W
$T_{J}$		-55 +150	°C
T <sub>JM</sub>		150	°C
$T_{stg}$		-55 +150	°C
T <sub>L</sub>	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	°C
M <sub>d</sub>	Mounting torque (TO-247)	1.13/10	Nm/lb.in.
Weight	TO-247 AD TO-268	6 4	g g

10-247 AD (IX I H)		
	(0)	
	Y	
G /		(TAB)

## TO-268 (IXTT) Case Style



G = Gate D = Drain S = Source TAB = Drain

**Features** 

- International standard packages
- Low R<sub>DS (on)</sub> HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect

### **Advantages**

- Easy to mount
- Space savings
- High power density

Symbol	<b>Test Conditions</b> $(T_J = 25^{\circ}C)$				
V <sub>DSS</sub>	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$ BV <sub>DSS</sub> Temperature Coefficient	-500	0.054		V %/K
V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \mu\text{A} \ V_{GS(th)}$ Temperature Coefficient	-3.0	-0.122	-5.0	V %/K
I <sub>GSS</sub>	$V_{GS} = \pm 20 V_{DC}, V_{DS} = 0$			±100	nA
I <sub>DSS</sub>	$V_{DS} = 0.8 \cdot V_{DSS}$ $T_{J} = 25^{\circ}C$ $V_{GS} = 0 V$ $T_{J} = 125^{\circ}C$			-200 -1	μA mA
R <sub>DS(on)</sub>	$V_{GS} = -10 \text{ V}, I_{D} = 0.5 \cdot I_{D25}$ $R_{DS(on)}$ Temperature Coefficient			0.75 0.6	Ω %/K

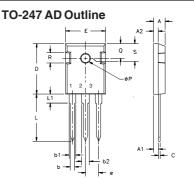


Symbol	Test Conditions Cha $(T_J = 25^{\circ}C, unless conditions)$ min.		istic Values se specified) max.
g <sub>fs</sub>	$V_{DS} = -10 \text{ V}; I_{D} = I_{D25}, \text{ pulse test}$ 5	9	s
C <sub>iss</sub>	)	4700	pF
C <sub>oss</sub>	$V_{GS} = 0 \text{ V}, V_{DS} = -25 \text{ V}, f = 1 \text{ MHz}$	430	pF
$\mathbf{C}_{rss}$	J	135	pF
t <sub>d(on)</sub>	)	33	ns
t <sub>r</sub>	$V_{gs} = -10 \text{ V}, V_{DS} = 0.5 V_{DSS}, I_{D} = 0.5 I_{D25}$	27	ns
$\mathbf{t}_{d(off)}$	$R_{\rm G} = 4.7 \Omega \text{ (External)}$	35	ns
t,	)	35	ns
Q <sub>G(on)</sub>	)	130	nC
Q <sub>GS</sub>	$V_{GS} = -10 \text{ V}, V_{DS} = 0.5 V_{DSS}, I_{D} = 0.5 I_{D25}$	46	nC
$\mathbf{Q}_{GD}$	J	92	nC
R <sub>thJC</sub>			0.42 K/W
R <sub>thCS</sub>	(TO-247)	0.25	K/W

### Source-Drain Diode

**Characteristic Values**  $(T_1 = 25^{\circ}C, unless otherwise specified)$ 

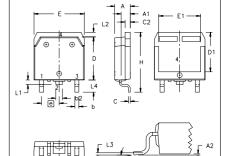
Symbol	Test Conditions	min.	typ.	max.	,
I <sub>s</sub>	V <sub>GS</sub> = 0	10P50 11P50		-10 -11	A A
I <sub>SM</sub>	Repetitive; pulse width limited by $T_{_{\rm JM}}$	10P50 11P50		-40 -44	A
V <sub>SD</sub>	$I_F = I_S$ , $V_{GS} = 0$ V, Pulse test, $t \le 300 \ \mu s$ , duty cycle $d \le 2$	%		-3	V
t <sub>rr</sub>	$I_F = I_S$ , di/dt = 100 A/ $\mu$ s		500		ns



Terminals: 1 - Gate 2 - Drain 3 - Source Tab - Drain

Dim.	Millimeter		Inc	hes
	Min.	Max.	Min.	Max.
Α	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b,	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
С	.4	.8	.016	.031
D	20.80	21.46	.819	.845
Е	15.75	16.26	.610	.640
е	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC





Terminals: 1 - Gate 2 - Drain 3 - Source Tab - Drain

	TNCI	IFC	MATE I TA	ACTEDS
MYZ	INCH			METERS
•	MIN	MAX	MIN	MAX
Α	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
Ε	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
е	.215 BSC		5.45	BSC
Н	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010	BSC	0.25 BSC	
L4	.150	.161	3.80	4.10

6,727,585 6,759,692 6771478B2

Fig. 1. Output Characteristics @ 25 Deg. C

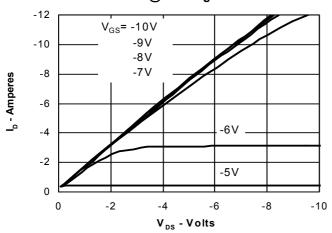


Fig. 2. Extended Output Characteristics @ 25 Deg. C

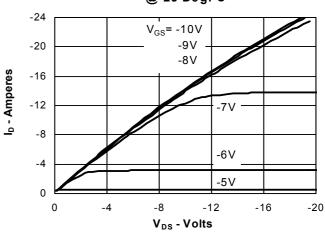


Fig. 3. Output Characteristics @ 125 Deg. C

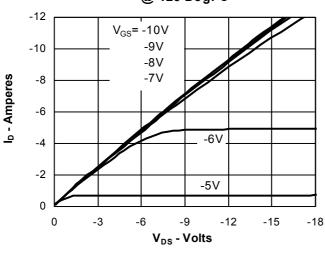


Fig. 4. R<sub>DS(ON)</sub> Normalized to I<sub>D25</sub> Value vs. Junction Temperature

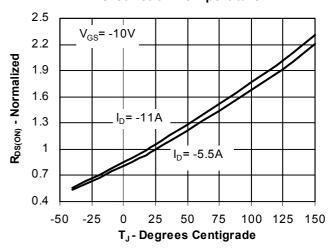


Fig. 5.  $R_{DS(ON)}$  Normalized to  $I_{D25}$ 

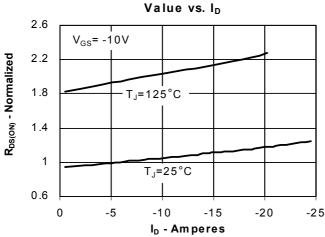


Fig. 6. Input Admittance

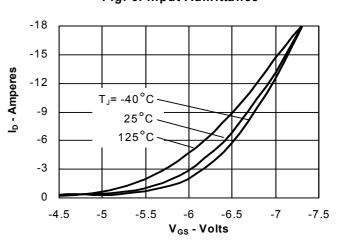




Fig. 7. Transconductance

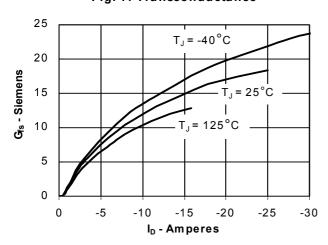


Fig. 8. Source Current vs. Source-To-Drain Voltage

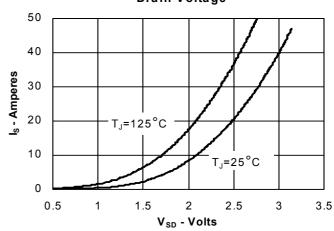


Fig. 9. Gate Charge

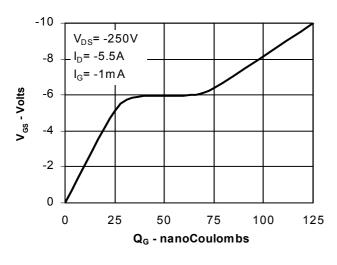


Fig. 10. Capacitance

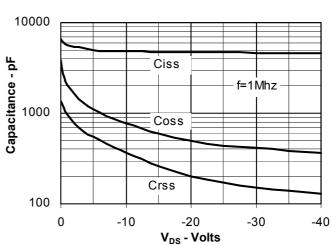
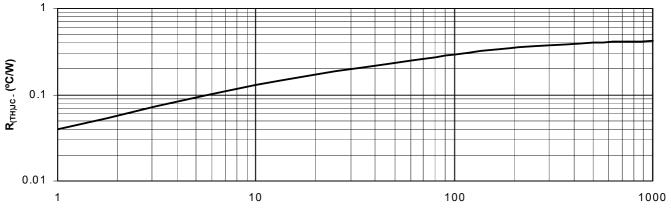


Fig. 14. Maximum Transient Thermal Resistance



Pulse Width - milliseconds