



High Voltage MOSFET

N-Channel, Depletion Mode

IXTP 02N50D
IXTU 02N50D
IXTY 02N50D

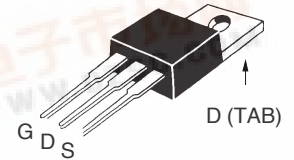
$V_{DSS} = 500 \text{ V}$
 $I_{D25} = 200 \text{ mA}$
 $R_{DS(on)} = 30 \text{ } \Omega$

Preliminary Data Sheet

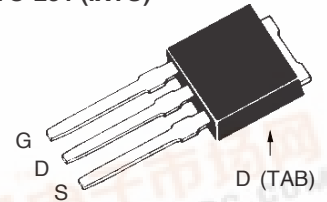


Symbol	Test Conditions	Maximum Ratings		
V_{DSX}	$T_J = 25^\circ\text{C}$ to 150°C	500	V	
V_{DGX}	$T_J = 25^\circ\text{C}$ to 150°C	500	V	
V_{GS}	Continuous	± 20	V	
V_{GSM}	Transient	± 30	V	
I_{DSS}	$T_C = 25^\circ\text{C}$; $T_J = 25^\circ\text{C}$ to 150°C	200	mA	
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_J	800	mA	
P_D	$T_C = 25^\circ\text{C}$	25	W	
	$T_A = 25^\circ\text{C}$	1.1	W	
T_J		-55 ... +150	$^\circ\text{C}$	
T_{JM}		150	$^\circ\text{C}$	
T_{stg}		-55 ... +150	$^\circ\text{C}$	
T_L	1.6 mm (0.063 in.) from case for 10 s	300	$^\circ\text{C}$	
T_{ISOL}	Plastic case for 10 s (IXTU)	300	$^\circ\text{C}$	
M_d	Mounting torque	TO-220	1.3 / 10	Nm/lb.
		TO-251	4	g
		TO-252	0.8	g
Weight		TO-220	4	g
		TO-251	0.8	g
		TO-252	0.8	g

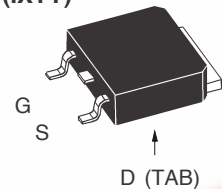
TO-220 (IXTP)



TO-251 (IXTU)



TO-252 (IXTY)



Pins: 1 - Gate 2 - Drain
 3 - Source TAB - Drain

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		min.	typ.	max.
V_{DSX}	$V_{GS} = -10 \text{ V}$, $I_D = 25 \text{ } \mu\text{A}$	500		V
$V_{GS(off)}$	$V_{DS} = 25 \text{ V}$, $I_D = 25 \text{ } \mu\text{A}$	-2.5		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
$I_{DSX(off)}$	$V_{DS} = V_{DSS}$, $V_{GS} = -10 \text{ V}$ $T_J = 125^\circ\text{C}$			10 μA
				250 μA
$R_{DS(on)}$	$V_{GS} = 0 \text{ V}$, $I_D = 50 \text{ mA}$ Note 1		20	$30 \text{ } \Omega$
			250	mA
$I_{D(on)}$	$V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$ Note 1		250	mA

Features

- Normally ON mode
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Fast switching speed

Applications

- Level shifting
- Triggers
- Solid state relays
- Current regulators

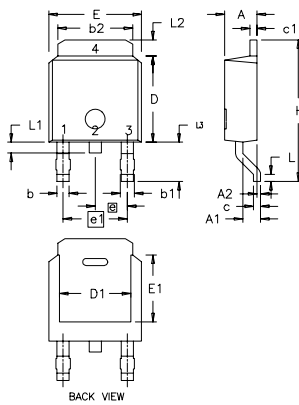


Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 50\text{ V}; I_D = 200\text{ mA}$ Note 1	100	150	mS
C_{iss}	$V_{GS} = -10\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		120	pF
C_{oss}			25	pF
C_{rss}			5	pF
$t_{d(on)}$	$V_{ds} = 100\text{ V}, I_D = 50\text{ mA}$ $V_{gs} = 0\text{ V to } -10$ $R_G = 30\Omega$ (External)		9	ns
t_r			4	ns
$t_{d(off)}$			28	ns
t_f			45	ns
R_{thJC}	TO-220		5	K/W
R_{thCS}			0.25	K/W

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{SD}	$V_{GS} = -10\text{ V}, I_F = 200\text{ mA}$ Note 1		0.7	1.5 V
t_{rr}	$I_F = 0.75\text{ A}, -di/dt = 10\text{ A}/\mu\text{s},$ $V_{DS} = 25\text{ V}, V_{GS} = -10\text{ V}$			1.0 μs

Note1: Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$

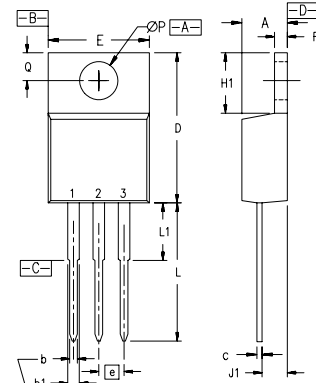
TO-252 AA Outline



Pins: 1 - Gate 2 - Drain
3 - Source TAB - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

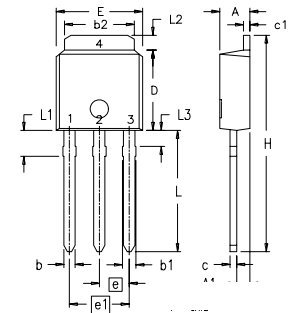
TO-220 AD Outline



Pins: 1 - Gate 2 - Drain
3 - Source TAB - Drain

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

TO-251 AA Outline



Pins: 1 - Gate 2 - Drain
3 - Source TAB - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	.086	.094
A1	0.89	1.14	0.35	.045
b	0.64	0.89	.025	.035
b1	0.76	1.14	.030	.045
b2	5.21	5.46	.205	.215
c	0.46	0.58	.018	.023
c1	0.46	0.58	.018	.023
D	5.97	6.22	.235	.245
E	6.35	6.73	.250	.265
e	2.28	BSC	.090	BSC
e1	4.57	BSC	.180	BSC
H	17.02	17.78	.670	.700
L	8.89	9.65	.350	.380
L1	1.91	2.28	.075	.090
L2	0.89	1.27	.035	.050
L3	1.15	1.52	.045	.060