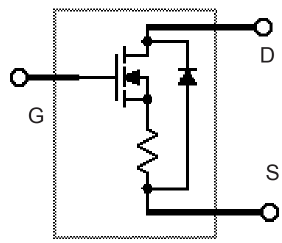
IXYS

Gate Controlled Current Limiter

N-Channel, Enhancement Mode

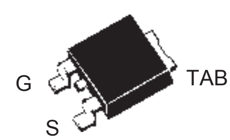
IXCP 01N90E
IXCY 01N90E

V_{DSS} = 900 V
$I_{D(limit)}$ = 250mA
$R_{DS(on)}$ = 80 Ω

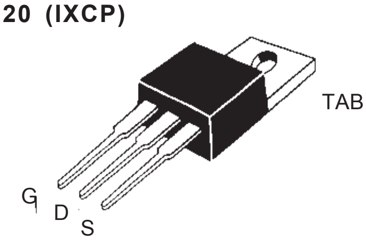


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	900	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	900	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
P_D	T_C = 25°C	40	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
M_d	Mounting torque with 3.5mm screw (TO-220)	0.55/5 Nm/lb.in.	
Weight		TO-251/252 = 1 g, TO-220 = 4 g	

TO-252 (IXCY)



TO-220 (IXCP)



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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 25 µA	900			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 25 µA	2.5		5	V
I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0			±50	nA
I_{DSS}	V_{DS} = $V_{DSS;}$ V_{GS} = 0 V			10	µA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 50 mA Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			80	Ω
I_{DP}	Plateau Current; V_{DS} = 10 V, V_{GS} = 10V Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %	100		130	mA

Features

- High output resistance in the saturated mode of operation
- Rugged HDMOS™ process
- Stable peak drain current limit
- High voltage current regulator
- International standard packages

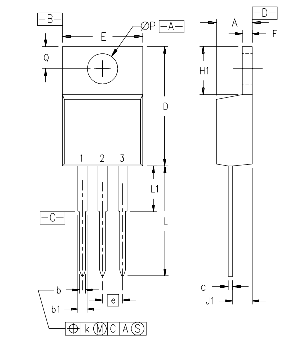
Applications

- Current regulation
- Over current and over voltage protection for sensitive loads
- Linear regulator

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 20 V; I_D = 100 mA, pulse test			40	mS
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		133		pF
C_{oss}			24		pF
C_{rss}			6.6		pF
$t_{d(on)}$	V_{DS} = 500 V, I_D = 50 mA		15		ns
t_r	V_{GS} = 10 V, R_G = 50 Ω (External)		137		ns
$t_{d(off)}$			11		ns
t_f			131		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 500 V, I_D = 50 mA		7.5		nC
Q_{gs}			2.2		nC
Q_{gd}			3.0		nC
$\Delta I_{A(P)}/\Delta T$	Plateau Current Shift with Temperature V_{DS}= 10 V, V_{GS}= 10 V		±50		ppm/K
$\Delta V_{AK}/\Delta I_{A(p)}$	Dynamic Resistance V_{DS} = 20 V, V_{GS}= 10 V	125			kΩ
V_F	I_F = 50mA			1.8	V
R_{thJC}				3.1	K/W
R_{thCA}	TO-220		80		K/W
	TO-251/252		100		K/W

IXYS reserves the right to change limits, test conditions, and dimensions.

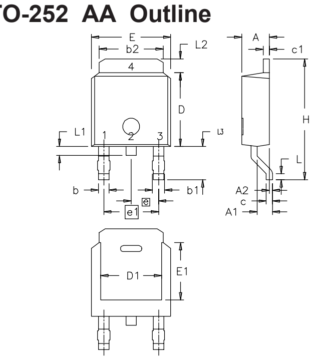
TO-220 AB Dimensions



Pins: 1 - Gate 2 - Drain
3 - Source 4 - Drain
Bottom Side

SYM	INCHES MIN	MAX	MILLIMETERS 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-252 AA Outline



Dim.	Millimeter Min.	Max.	Inches 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

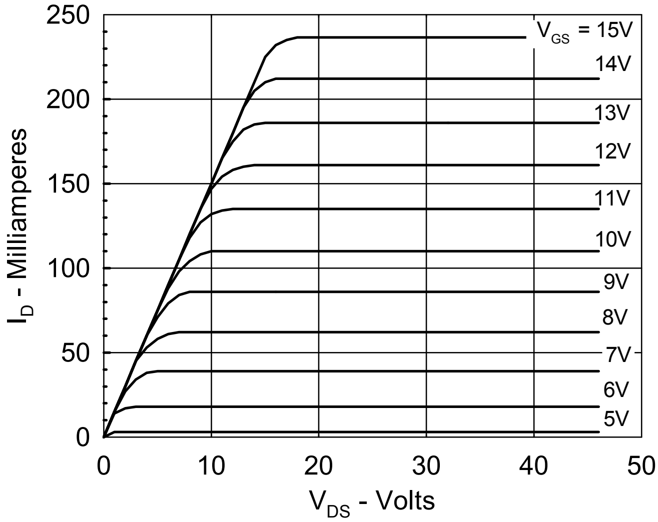


Figure 1, Output Characteristics at 25ºC

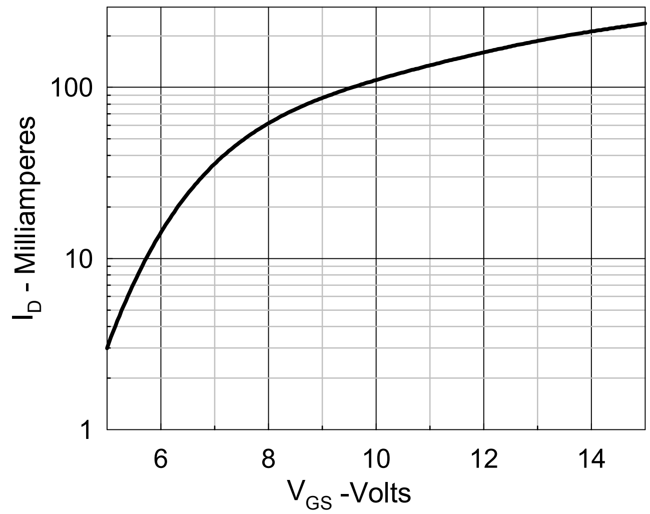


Figure 2. Drain Current vs.Gate Voltage

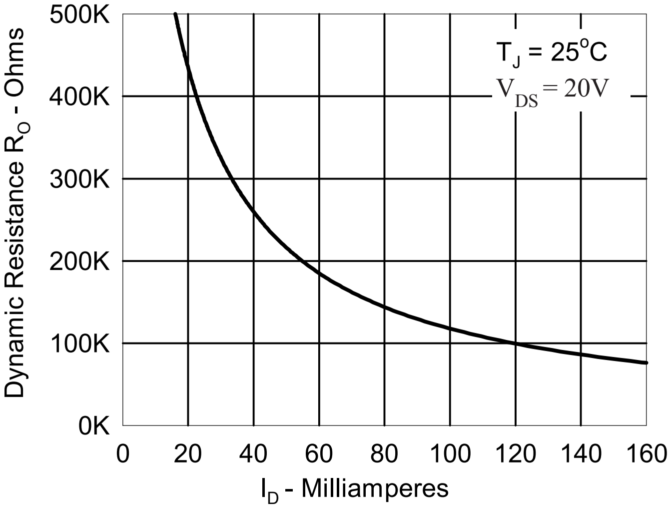


Figure 3. Dynamic Output Resistance R_O vs. Drain Current.

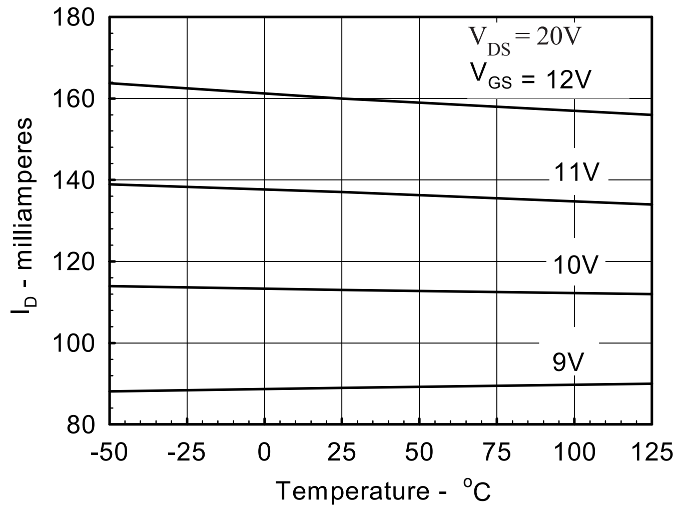


Figure 4. Drain Current vs, Temperature for a constant gate-source voltage.

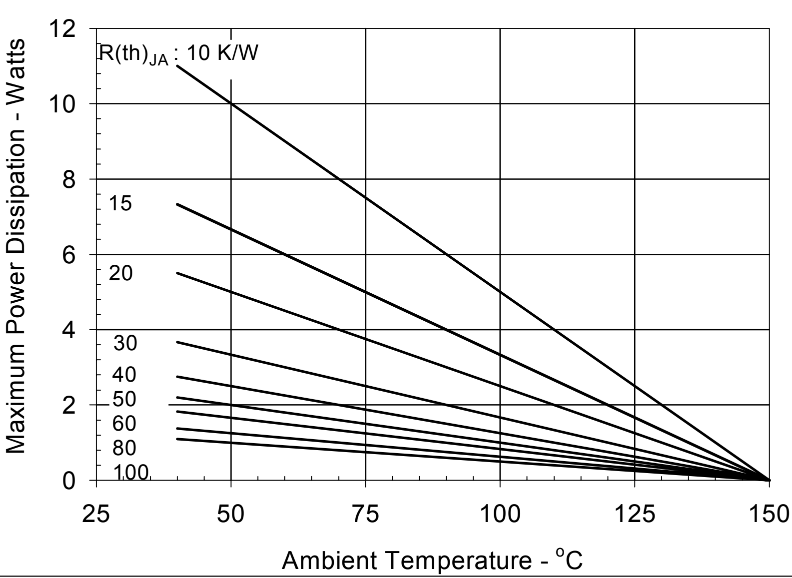


Figure 5. Allowable Power Dissipation for various heat sinking conditions. Note that the junction temperature can be derated by increasing the ambient temperature a like amount.