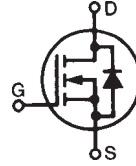


# High Voltage Power MOSFET

**IXTA05N100HV**  
**IXTA05N100**  
**IXTP05N100**

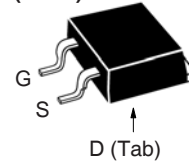
$V_{DSS} = 1000V$   
 $I_{D25} = 750mA$   
 $R_{DS(on)} \leq 17\Omega$

N-Channel Enhancement Mode  
Avalanche Rated

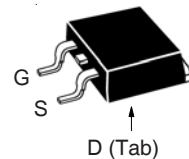


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	1000	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GS} = 1M\Omega$	1000	V
$V_{GSS}$	Continuous	$\pm 30$	V
$V_{GSM}$	Transient	$\pm 40$	V
$I_{D25}$	$T_C = 25^\circ C$	750	mA
$I_{DM}$	$T_C = 25^\circ C$ , Pulse Width Limited by $T_{JM}$	3	A
$I_A$	$T_C = 25^\circ C$	1	A
$E_{AS}$	$T_C = 25^\circ C$	100	mJ
$dv/dt$	$I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J = 150^\circ C$	3	V/ns
$P_D$	$T_C = 25^\circ C$	40	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$T_L$	Maximum Lead Temperature for Soldering	300	$^\circ C$
$T_{SOLD}$	1.6 mm (0.062in.) from Case for 10s	260	$^\circ C$
$M_d$	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in
<b>Weight</b>	TO-220	3.0	g
	TO-263	2.5	g
	TO-263HV	2.5	g

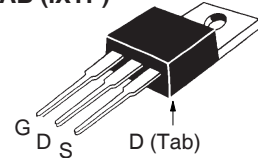
TO-263HV (IXTA)



TO-263 AA (IXTA)



TO-220AB (IXTP)



G = Gate      D = Drain  
S = Source    Tab = Drain

## Features

- High Voltage Package (TO-263HV)
- Fast Switching Times
- Avalanche Rated
- $R_{ds(on)}$  HDMOS™ Process
- Rugged Polysilicon Gate Cell structure
- Extended FBSOA

## Advantages

- High Power Density
- Space Savings

## Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Flyback Inverters
- DC Choppers

Symbol	Test Conditions ( $T_J = 25^\circ C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{DSS}$	$V_{GS} = 0V$ , $I_D = 250\mu A$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\mu A$	2.5		V
$I_{GSS}$	$V_{GS} = \pm 30V$ , $V_{DS} = 0V$			$\pm 100$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0V$ $T_J = 125^\circ C$			25 $\mu A$ 500 $\mu A$
$R_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 375mA$ , Note 1			17 $\Omega$

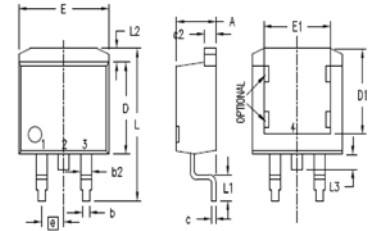
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 20\text{V}, I_D = 500\text{mA}$ , Note 1	0.55	0.93	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		260	pF
$C_{oss}$			22	pF
$C_{rss}$			8	pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{A}$ $R_G = 47\Omega$ (External)		11	ns
$t_r$			19	ns
$t_{d(off)}$			40	ns
$t_f$			28	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{A}$		7.8	nC
$Q_{gs}$			1.4	nC
$Q_{gd}$			4.1	nC
$R_{thJC}$			3.1	$^\circ\text{C/W}$
$R_{thCS}$	(TO-220)	0.50		$^\circ\text{C/W}$

### Source-Drain Diode

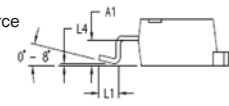
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			750 mA
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			3 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{V}$ , Note 1			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$		710	ns

Note 1: Pulse test,  $t \leq 300\mu\text{s}$ , duty cycle,  $d \leq 2\%$ .

### TO-263AA Outline



PIN: 1 - Gate  
2,4 - Source  
3 - Drain



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

### TO-220AB Outline

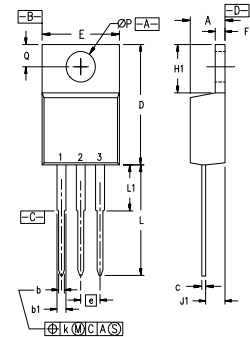


Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$

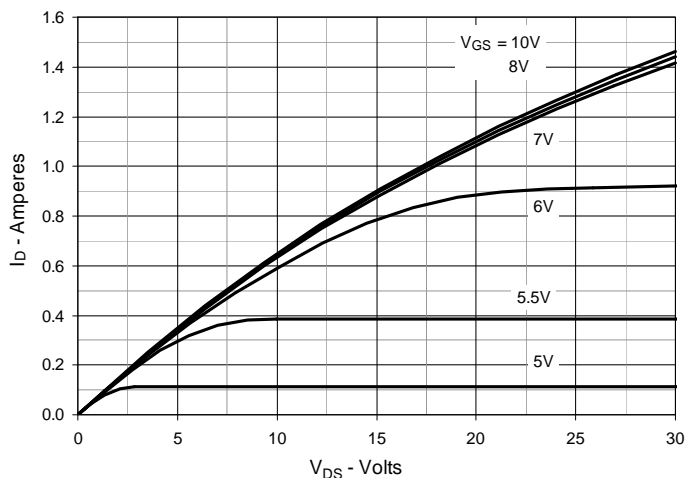


Fig. 2. Output Characteristics @  $T_J = 125^\circ\text{C}$

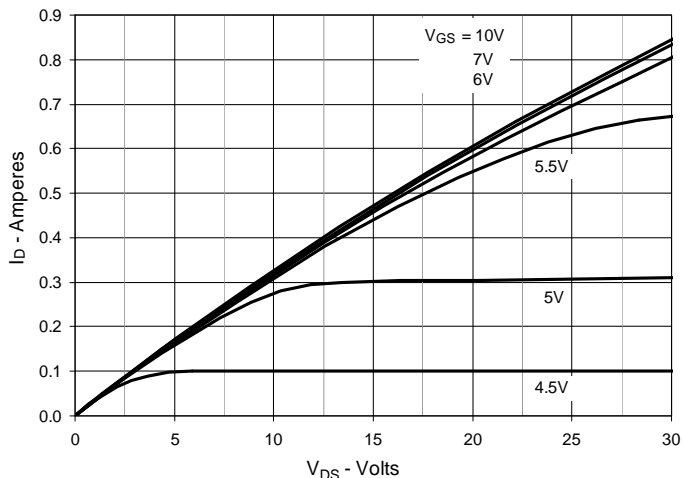


Fig. 3.  $R_{DS(on)}$  Normalized to  $I_D = 375\text{mA}$  Value vs. Junction Temperature

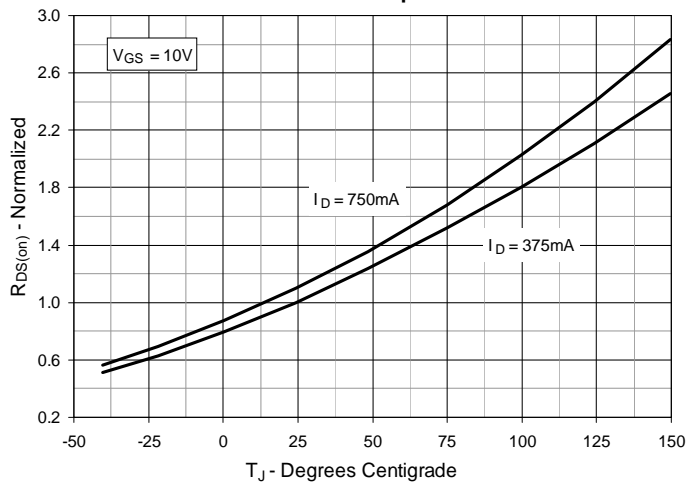


Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 375\text{mA}$  Value vs. Drain Current

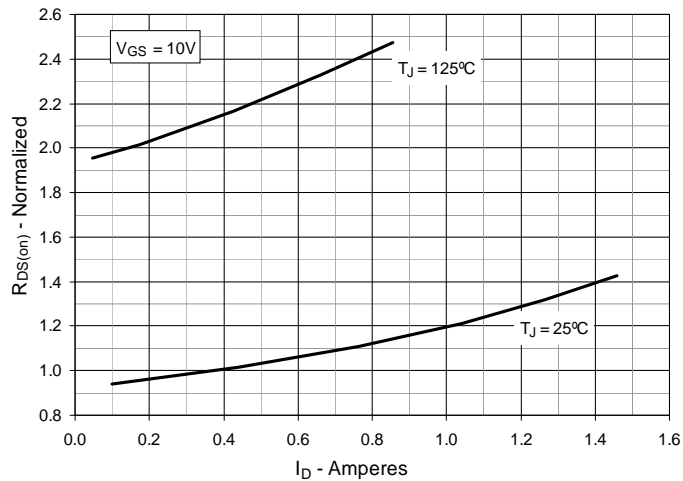


Fig. 5. Maximum Drain Current vs. Case Temperature

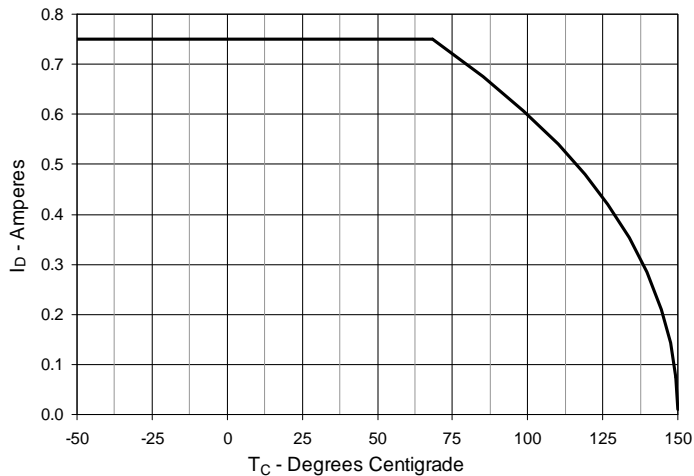
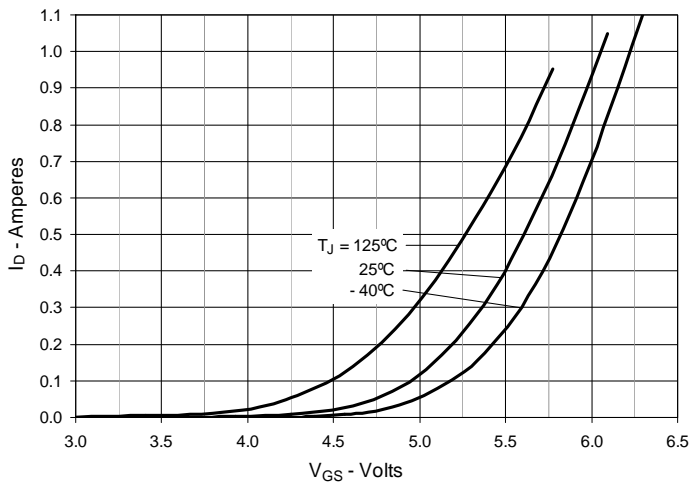
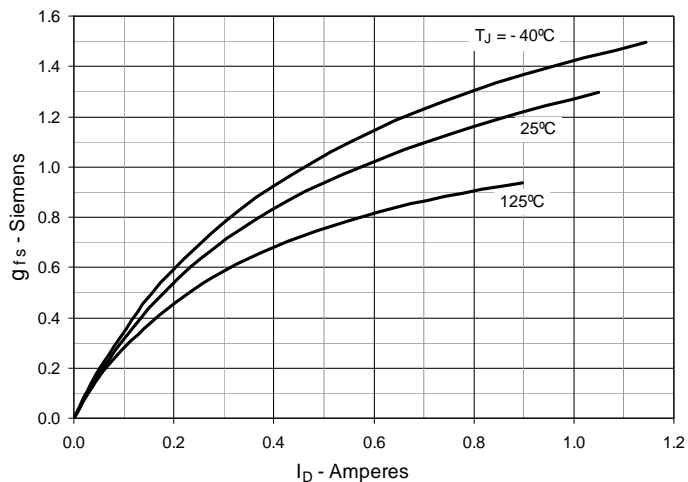


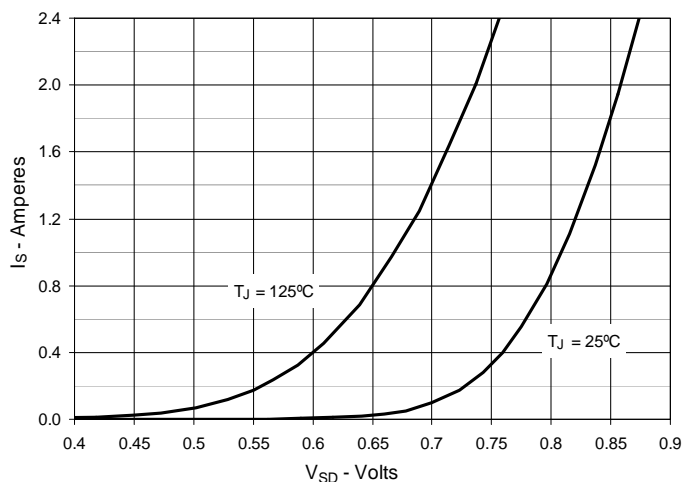
Fig. 6. Input Admittance



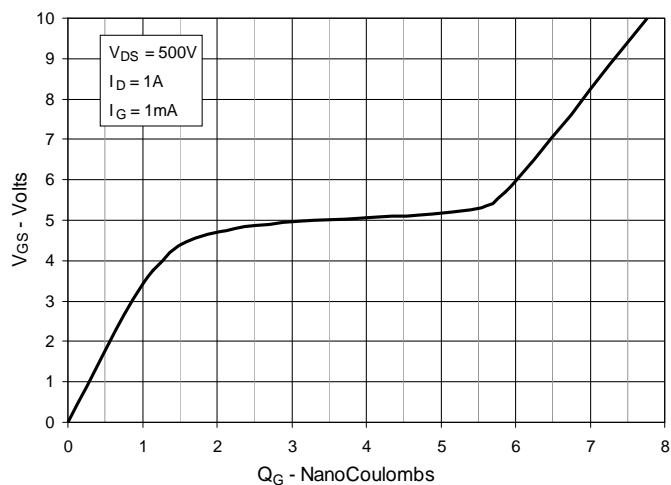
**Fig. 7. Transconductance**



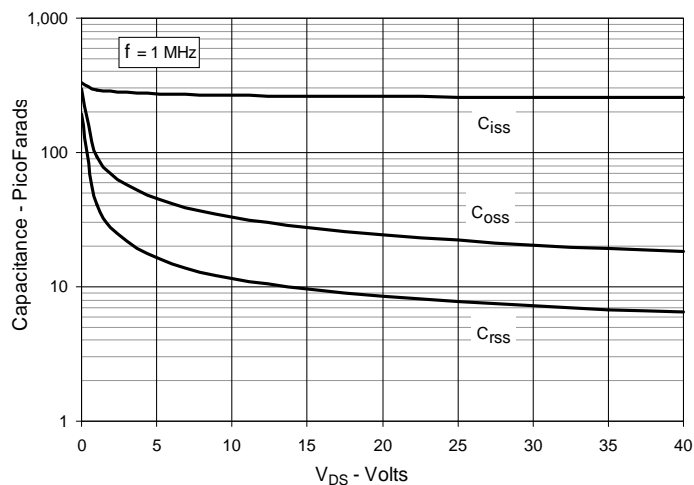
**Fig. 8. Forward Voltage Drop of Intrinsic Diode**



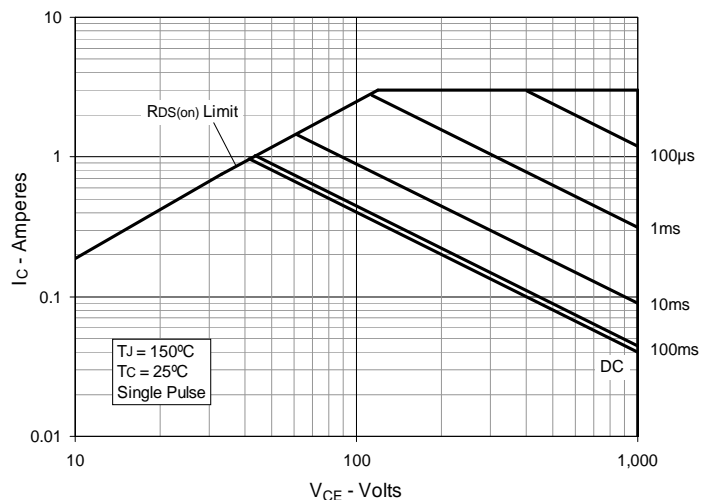
**Fig. 9. Gate Charge**



**Fig. 10. Capacitance**



**Fig. 11. Forward-Bias Safe Operating Area @  $T_C = 25^\circ\text{C}$**



**Fig. 12. Forward-Bias Safe Operating Area @  $T_C = 75^\circ\text{C}$**

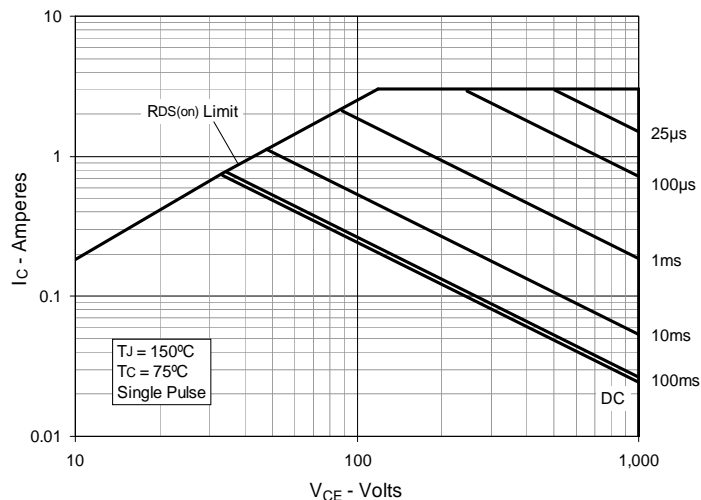
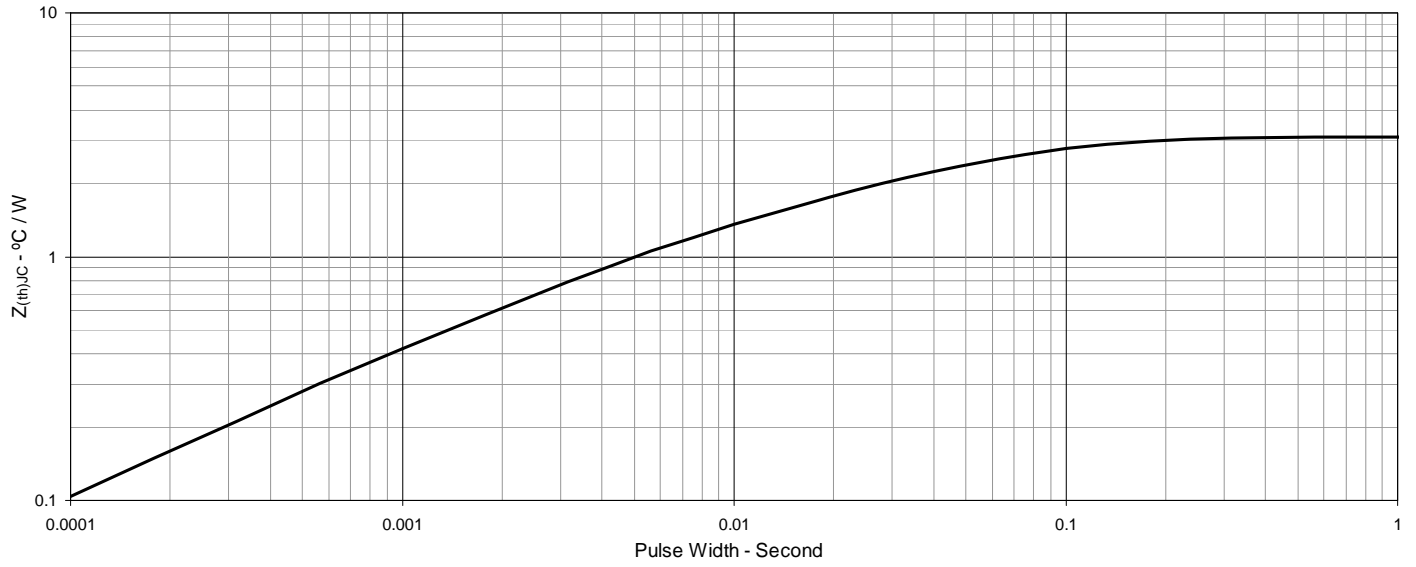


Fig. 13. Maximum Transient Thermal Impedance





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