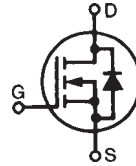


# High Voltage MOSFET

**IXTA 1N100**  
**IXTP 1N100**

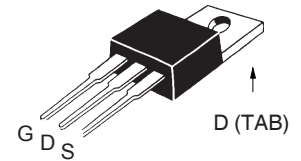
$V_{DSS} = 1000\text{ V}$   
 $I_{D25} = 1.5\text{ A}$   
 $R_{DS(on)} = 11\ \Omega$

N-Channel Enhancement Mode  
Avalanche Energy Rated

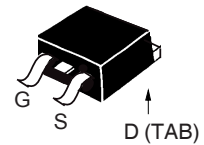


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1000	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$	1000	V
$V_{GS}$	Continuous	$\pm 30$	V
$V_{GSM}$	Transient	$\pm 40$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	1.5	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	6	A
$I_{AR}$		1.5	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	6	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	200	mJ
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100\text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 18\ \Omega$	3	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	54	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$M_d$	Mounting torque	1.13/10	Nm/lb.in.
<b>Weight</b>		4	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

## TO-220AB (IXTP)



## TO-263 AA (IXTA)



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

## Features

- International standard packages
- High voltage, Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Fast switching times

## Applications

- Switch-mode and resonant-mode power supplies
- Flyback inverters
- DC choppers
- High frequency matching

## Advantages

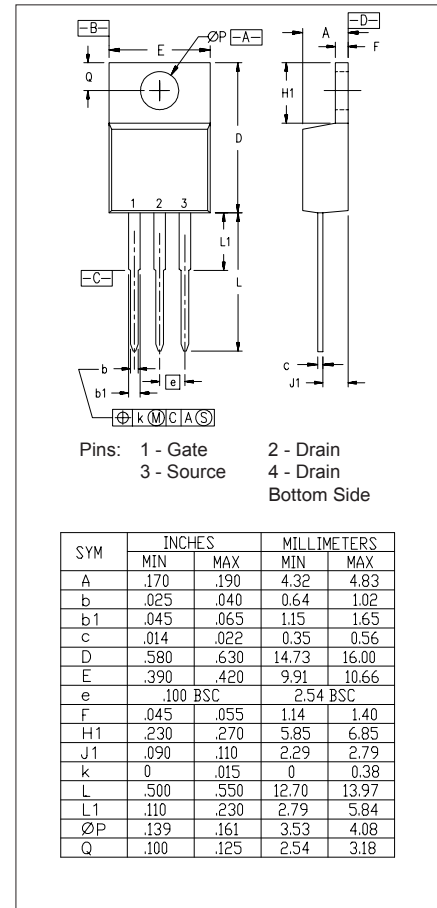
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 250\ \mu\text{A}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 25\ \mu\text{A}$	2.5		4.5 V
$I_{GSS}$	$V_{GS} = \pm 30\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0\text{ V}$			25 $\mu\text{A}$ 500 $\mu\text{A}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 1.0\text{ A}$ Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			11 $\Omega$

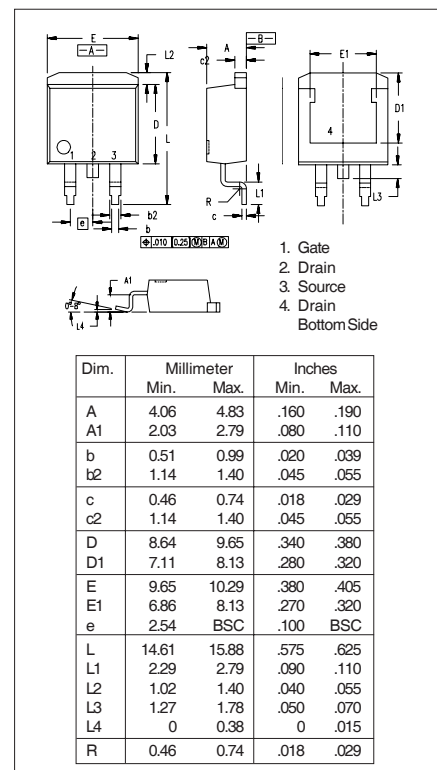
Symbol	Test Conditions	Characteristic Values		
		$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 20\text{ V}; I_D = 1.0\text{ A}, \text{ pulse test}$	0.8	1.5	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		400	pF
$C_{oss}$			37	pF
$C_{rss}$			13	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{ A}$ $R_G = 18\Omega, \text{ (External)}$		18	ns
$t_r$			19	ns
$t_{d(off)}$			20	ns
$t_f$			18	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{ A}$		14.5	nC
$Q_{gs}$			3.0	nC
$Q_{gd}$			7.5	nC
$R_{thJC}$				2.3 K/W
$R_{thCK}$	(IXTP)		0.50	K/W

Source-Drain Diode		Characteristic Values		
		$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$		
Symbol	Test Conditions	min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			1.5 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			6 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s}, \text{ duty cycle } d \leq 2\%$			1.8 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		710	ns

### TO-220 AD Dimensions



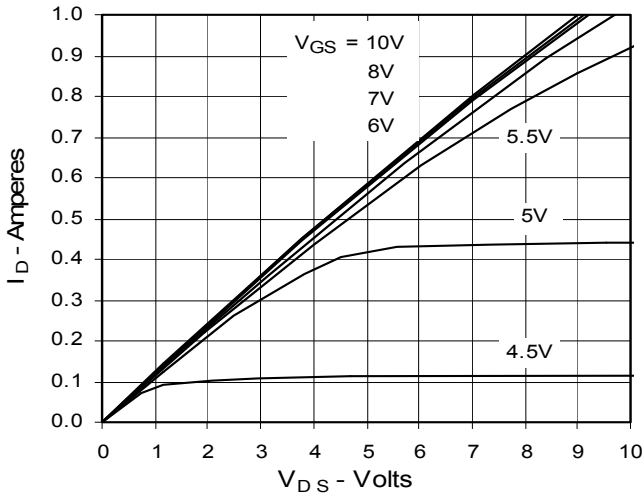
### TO-263 AA Outline



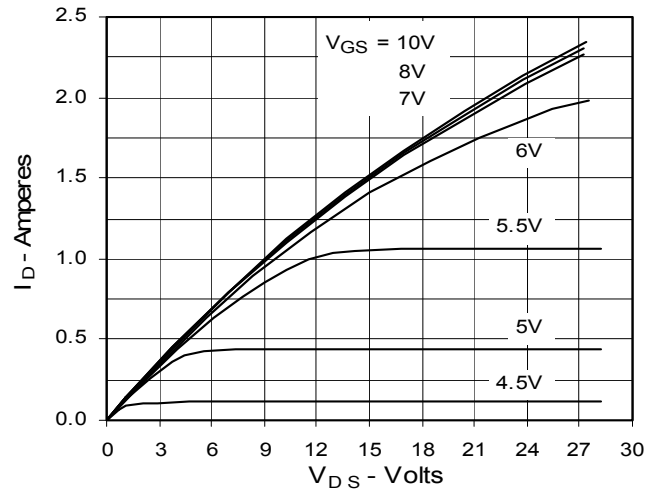
IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	

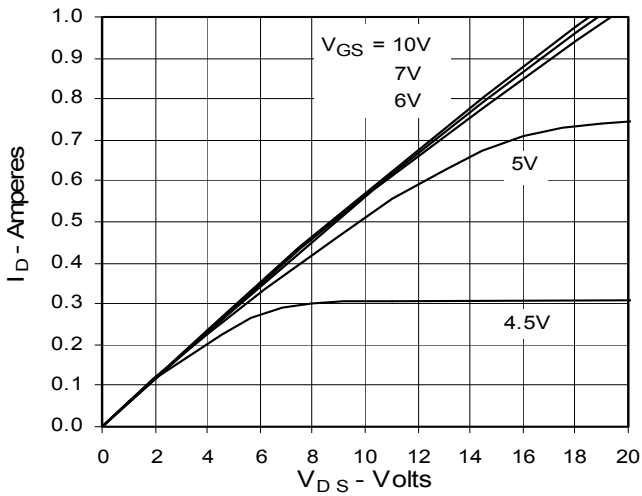
**Fig. 1. Output Characteristics**  
@ 25°C



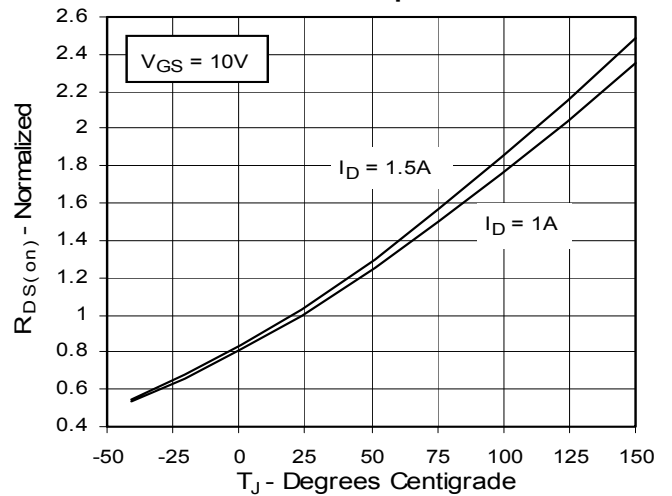
**Fig. 2. Extended Output Characteristics**  
@ 25°C



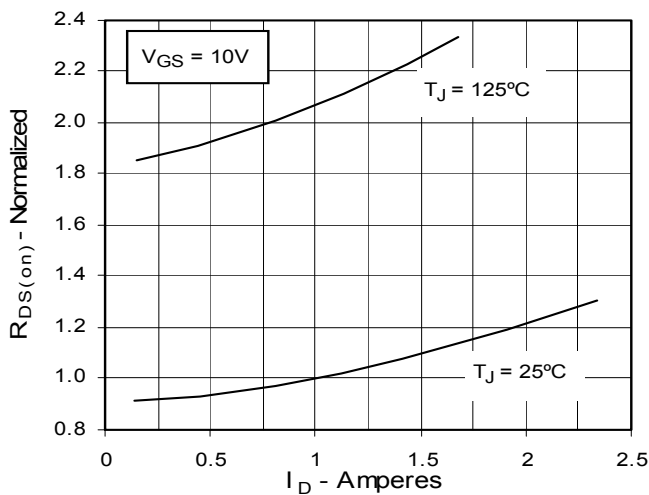
**Fig. 3. Output Characteristics**  
@ 125°C



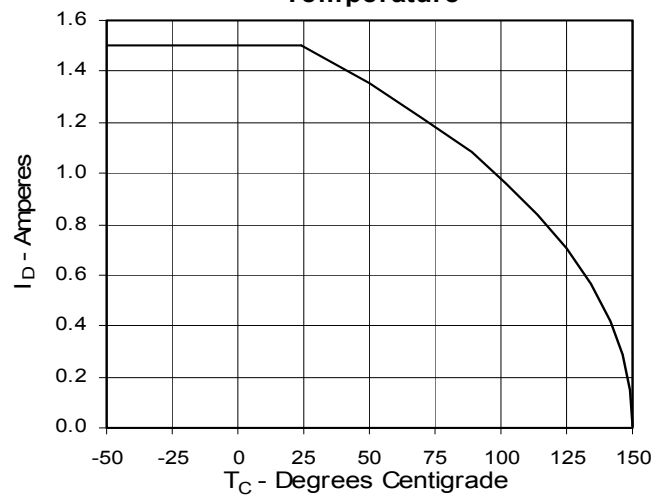
**Fig. 4. Normalized  $R_{DS(on)}$  vs. Junction Temperature**



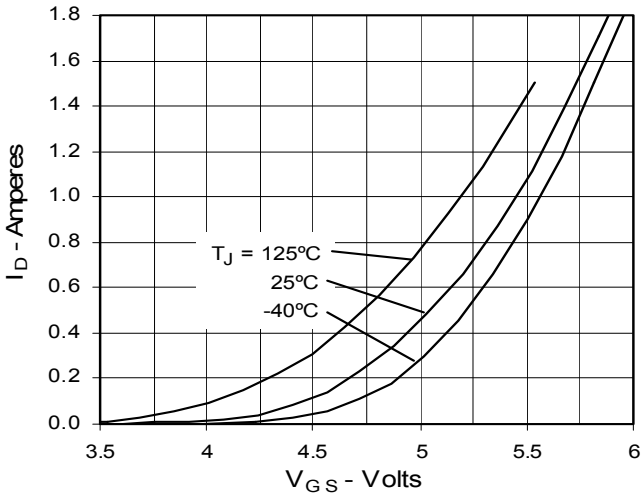
**Fig. 5. Normalized  $R_{DS(on)}$  vs.  $I_D$**



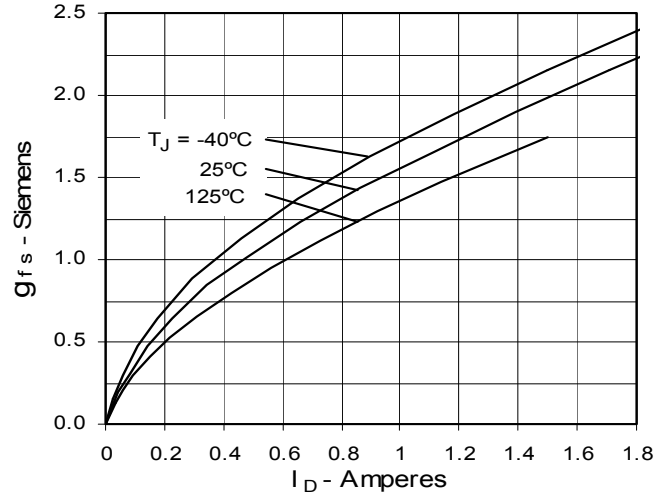
**Fig. 6. Drain Current vs. Case Temperature**



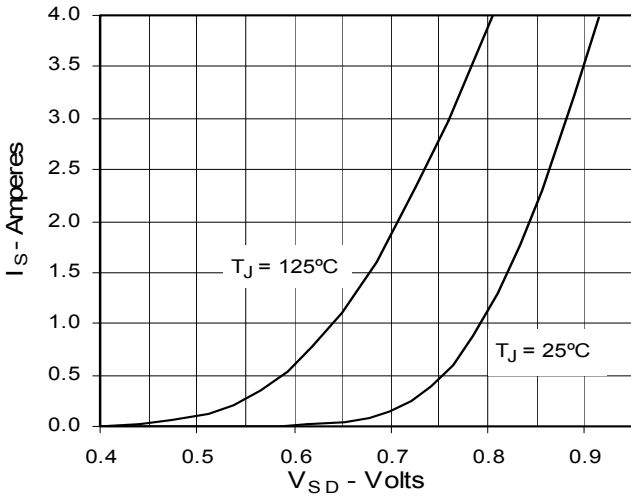
**Fig. 7. Input Admittance**



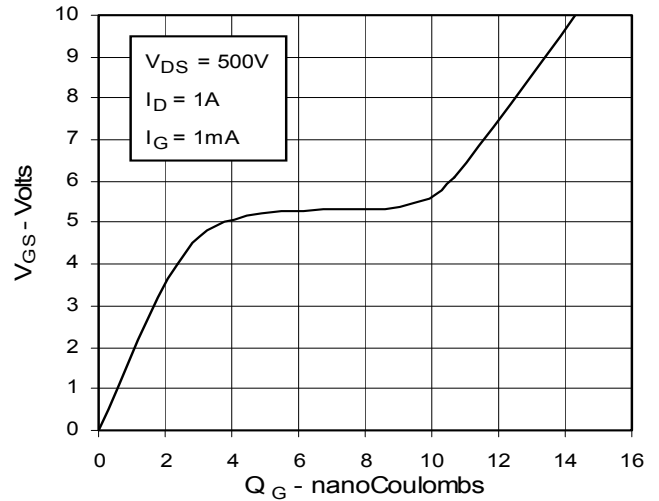
**Fig. 8. Transconductance**



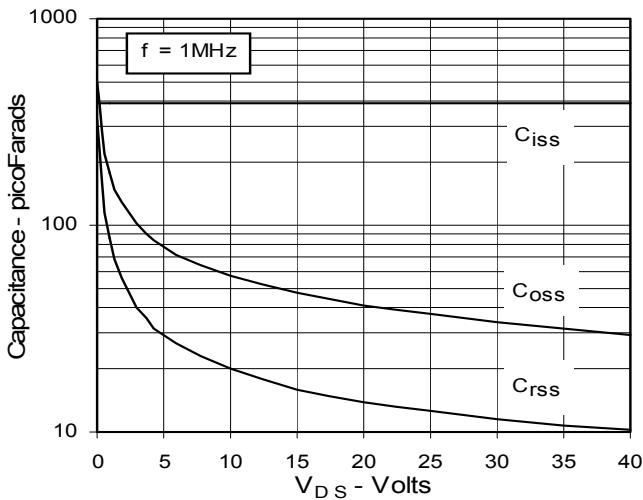
**Fig. 9. Source Current vs. Source-To-Drain Voltage**



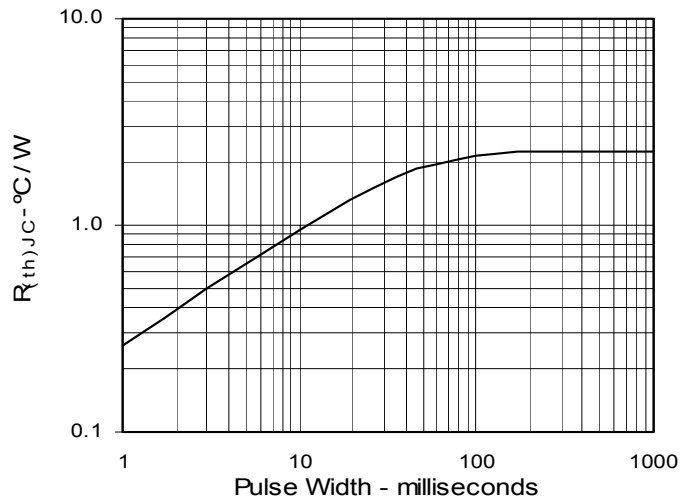
**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



**Fig. 13. Maximum Transient Thermal Resistance**





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