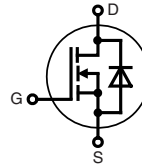


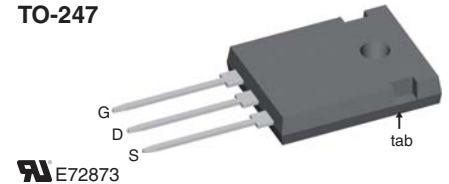
CoolMOS™ 1) Power MOSFET

Low $R_{DS(on)}$, high V_{DSS}
Superjunction MOSFET

$$\begin{aligned} V_{DSS} &= 600 \text{ V} \\ I_{D25} &= 47 \text{ A} \\ R_{DS(on) \text{ max}} &= 70 \text{ m}\Omega \end{aligned}$$



TO-247



MOSFET			
Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	47	A
I_{D100}	$T_C = 100^\circ\text{C}$	30	A
E_{AS}	single pulse $I_D = 10 \text{ A}; T_C = 25^\circ\text{C}$	1800	mJ
E_{AR}	repetitive $I_D = 20 \text{ A}; T_C = 25^\circ\text{C}$	tbd	mJ
dV/dt	MOSFET dV/dt ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	tbd	V/ns

Features

- 3rd generation Superjunction power MOSFET
- high blocking capability
- lowest resistance
- avalanche rated for unclamped inductive switching (UIS)
- low thermal resistance due to reduced chip thickness

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG.

Symbol	Conditions	Characteristic Values			
		(T _{VJ} = 25°C, unless otherwise specified)			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = I_{D100}^{\text{①}}$		60	70	mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 2 \text{ mA}$	2		4	V
I_{DSS}	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$			25 250	μA μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			± 100	nA
C_{iss} C_{oss}	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		tbd tbd		pF pF
Q_g Q_{gs} Q_{gd}	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 350 \text{ V}; I_D = 40 \text{ A}$		255 30 110	650	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 380 \text{ V}$ $I_D = 47 \text{ A}; R_G = 4.7 \Omega$		20 27 111 10		ns ns ns ns
R_{thJC}				0.3	K/W

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

Source-Drain Diode

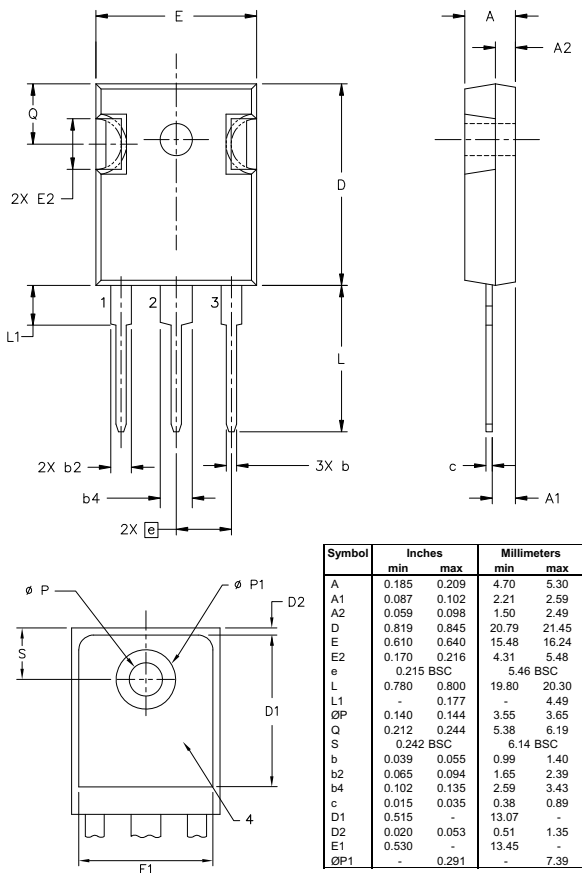
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			A
V_{SD}	$I_F = 40\text{ A}; V_{GS} = 0\text{ V}$			V
t_{rr} Q_{RM} I_{RM}	$I_F = 40\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 640\text{ V}$			ns μC A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}		-55...+150	°C
M_d	mounting torque	1.13	Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R_{thCH}	with heatsink compound		tbd	K/W
Weight			2.7	g

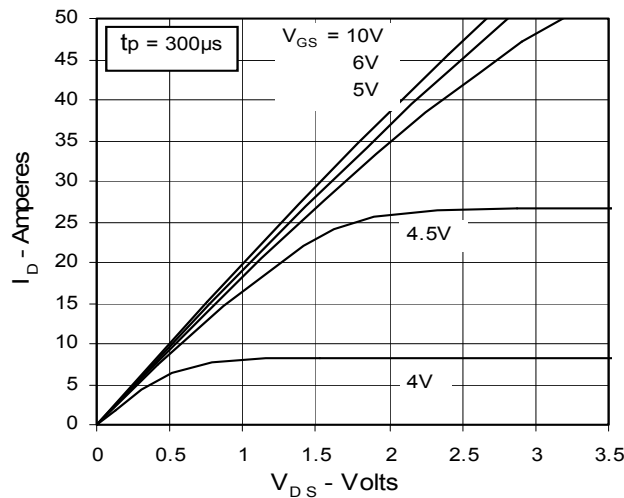
TO-247 Outline



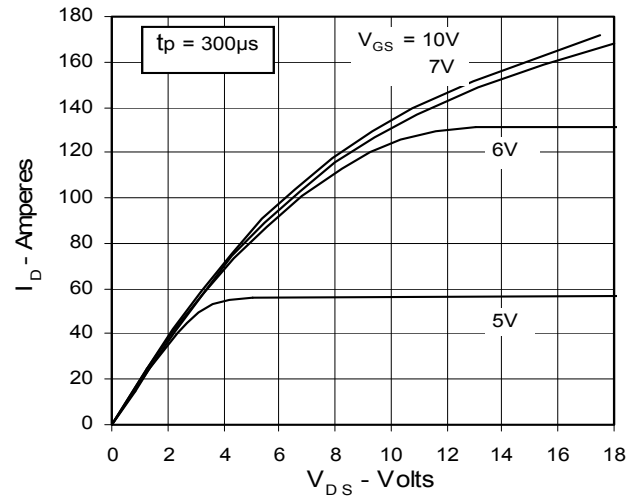
IXYS reserves the right to change limits, test conditions and dimensions.

20080523a

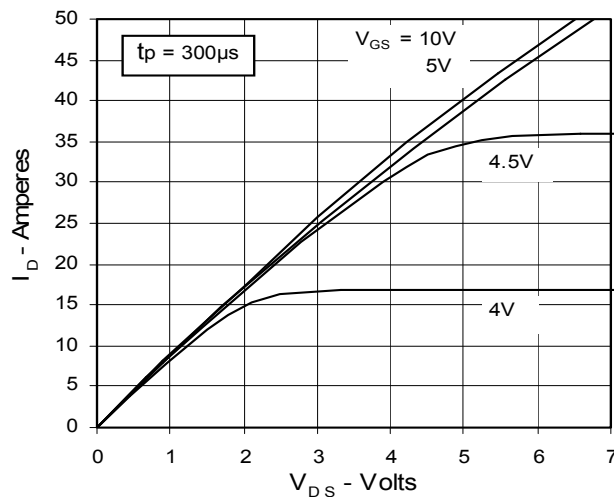
**Fig. 1. Output Characteristics
@ 25 Deg. C**



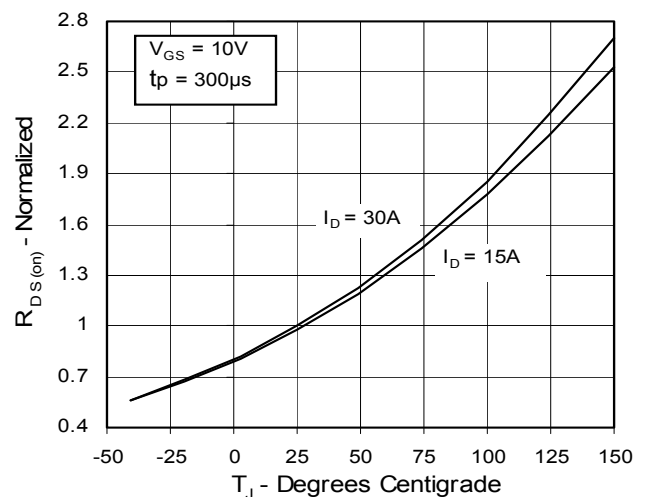
**Fig. 2. Extended Output Characteristics
@ 25 deg. C**



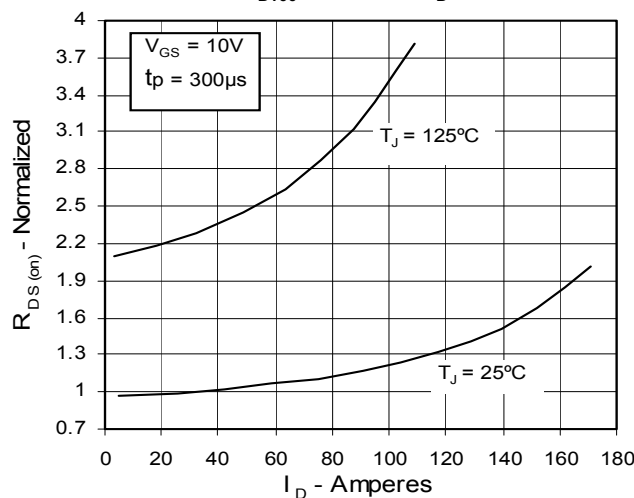
**Fig. 3. Output Characteristics
@ 125 Deg. C**



**Fig. 4. $R_{DS(on)}$ Normalized to I_{D100} Value
vs. Junction Temperature**



**Fig. 5. $R_{DS(on)}$ Normalized to
 I_{D100} Value vs. I_D**



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

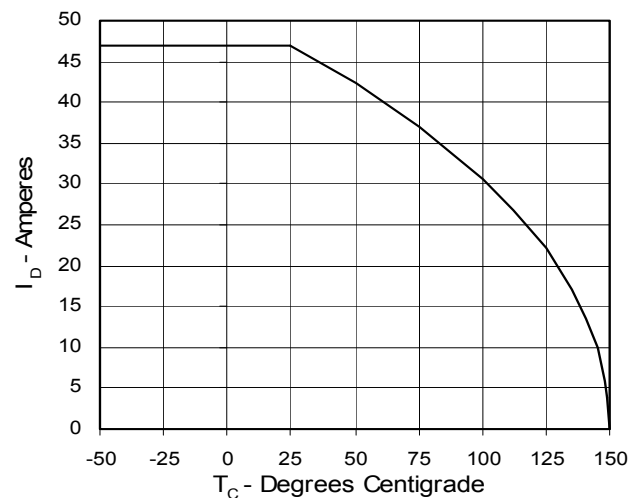


Fig. 7. Input Admittance

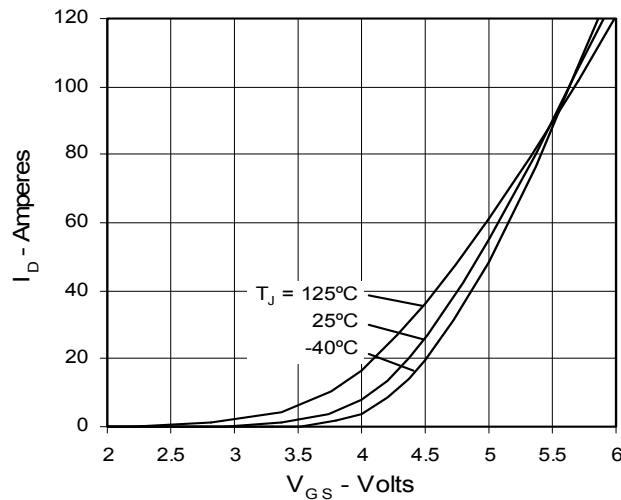


Fig. 8. Transconductance

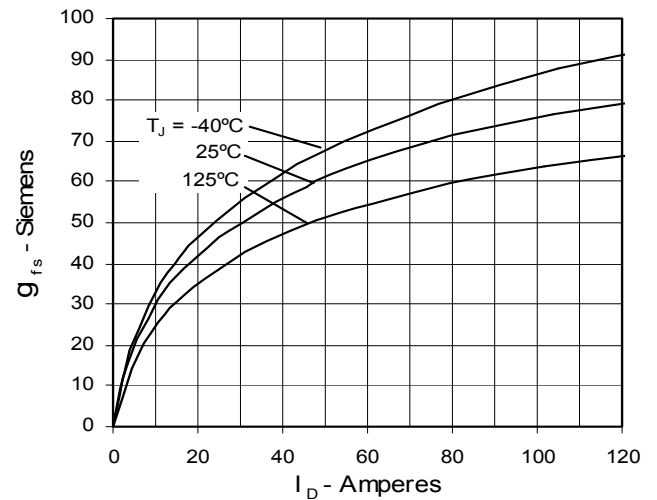


Fig. 9. Source Current vs. Source-To-Drain Voltage

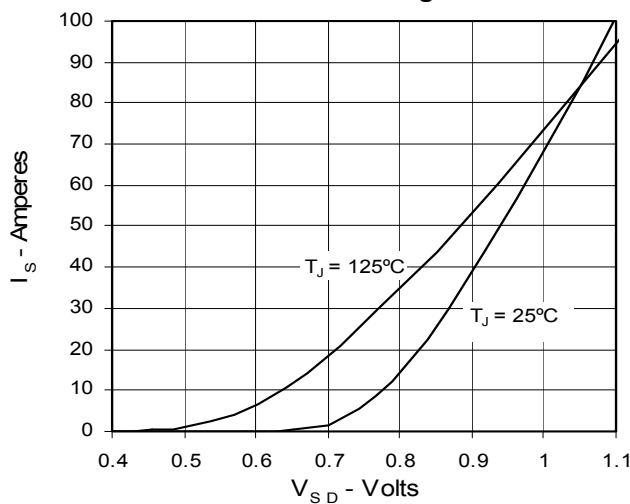


Fig. 10. Gate Charge

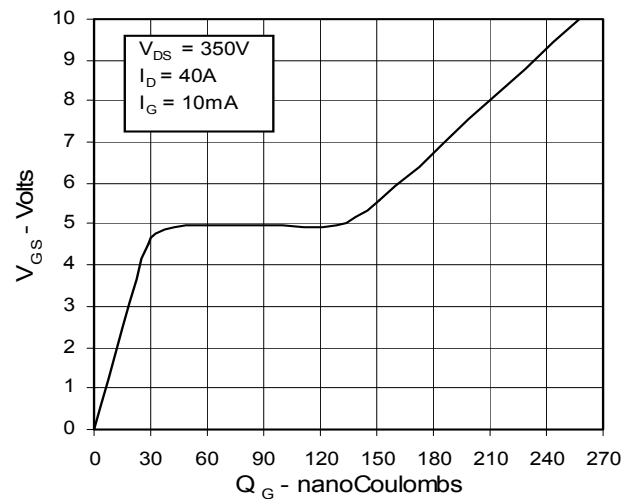


Fig. 11. Capacitance

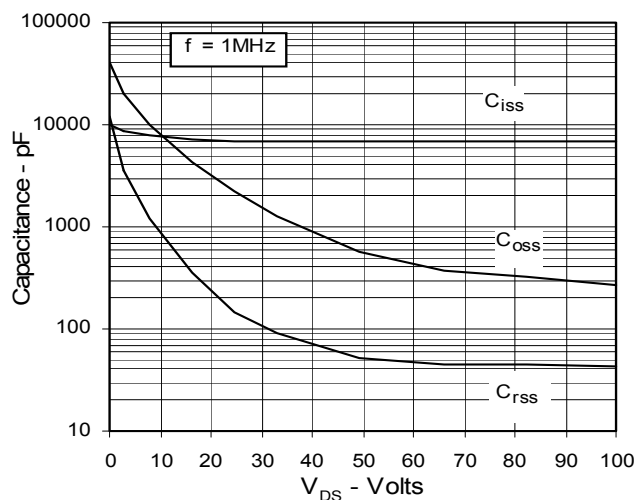


Fig. 12. Maximum Transient Thermal Resistance

