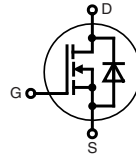


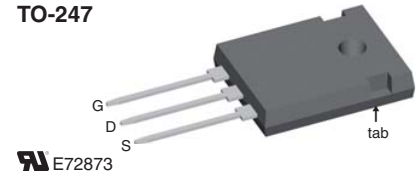
## CoolMOS™ 1) Power MOSFET

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
$V_{GS}$		$\pm 20$	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

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

<sup>①</sup> Pulse test,  $t \leq 300 \mu\text{s}$ , duty cycle  $d \leq 2\%$

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

### Source-Drain Diode

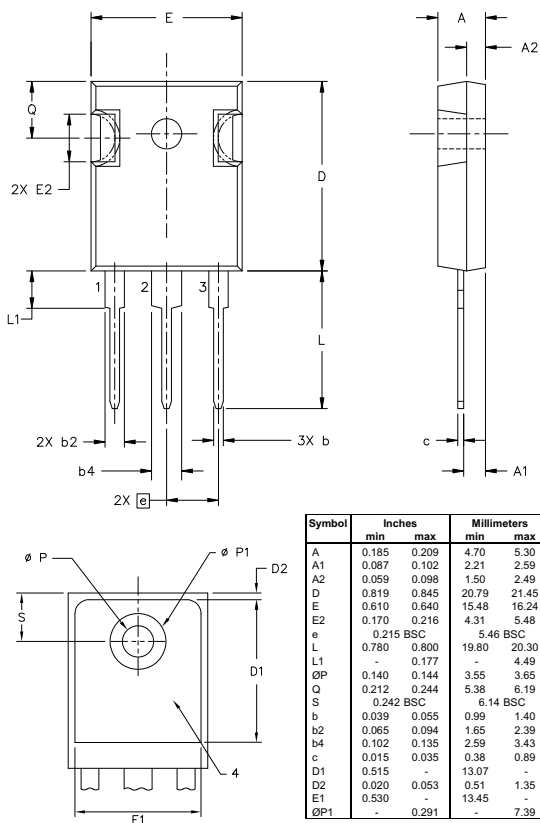
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)				
$I_S$	$V_{GS} = 0\text{ V}$			A
$V_{SD}$	$I_F = 40\text{ A}; V_{GS} = 0\text{ V}$			V
$t_{rr}$	$I_F = 40\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 640\text{ V}$			ns
$Q_{RM}$				$\mu\text{C}$
$I_{RM}$				A

### Component

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-55...+150	$^{\circ}\text{C}$
$T_{stg}$		-55...+150	$^{\circ}\text{C}$
$M_d$	mounting torque	1.13	Nm

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

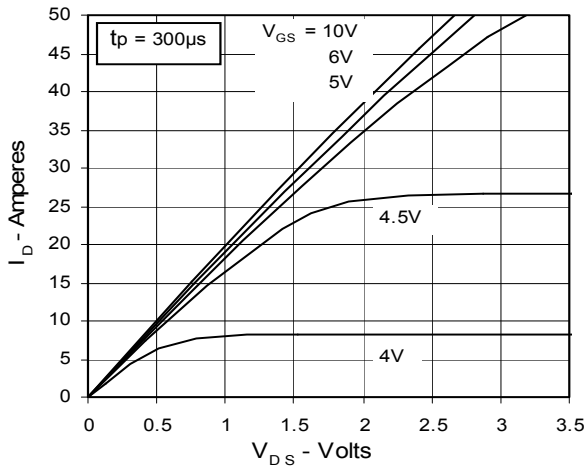
### TO-247 Outline



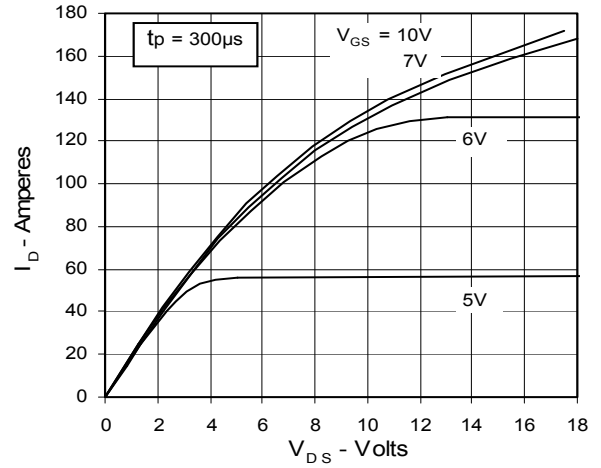
IXYS reserves the right to change limits, test conditions and dimensions.

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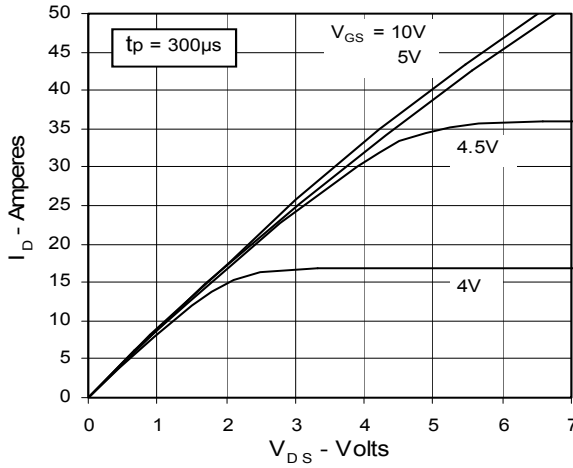
**Fig. 1. Output Characteristics @ 25 Deg. C**



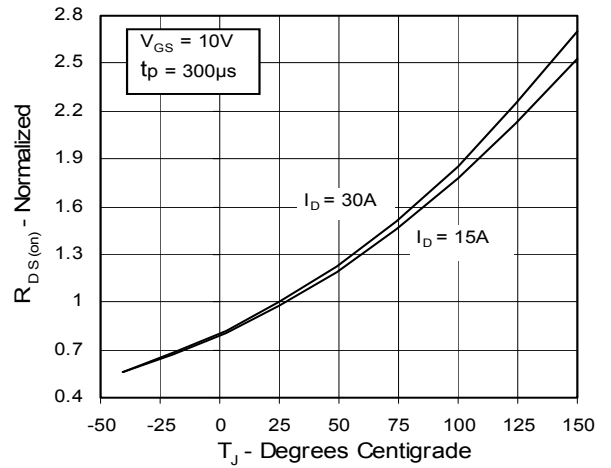
**Fig. 2. Extended Output Characteristics @ 25 deg. C**



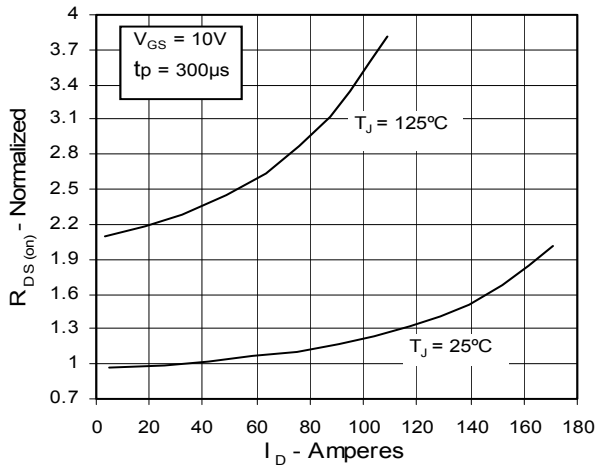
**Fig. 3. Output Characteristics @ 125 Deg. C**



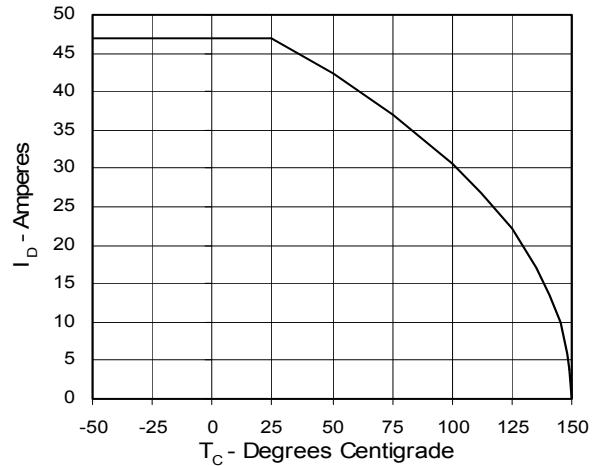
**Fig. 4. R\_DS(on) Normalized to I\_D100 Value vs. Junction Temperature**



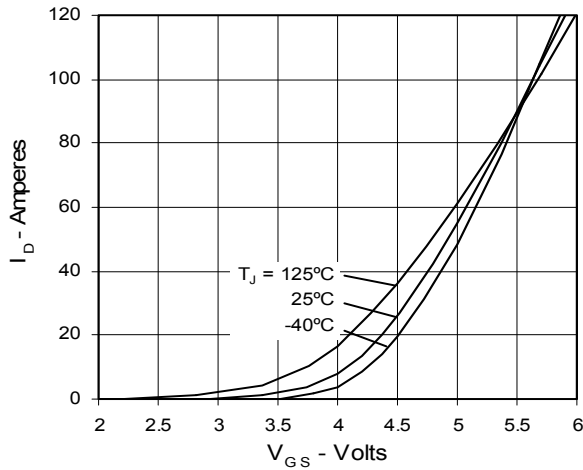
**Fig. 5. R\_DS(on) Normalized to I\_D100 Value vs. I\_D**



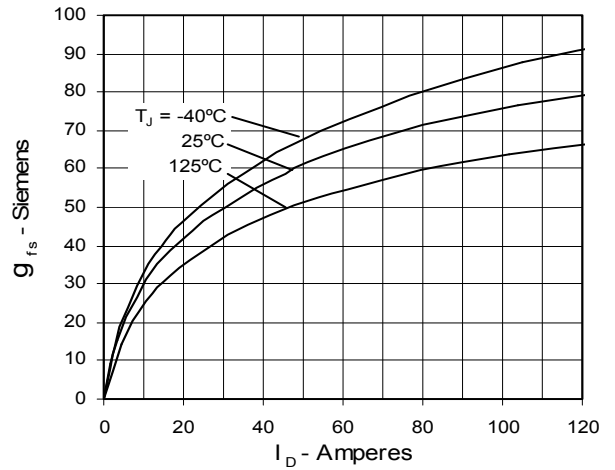
**Fig. 6. Drain Current vs. Case Temperature**



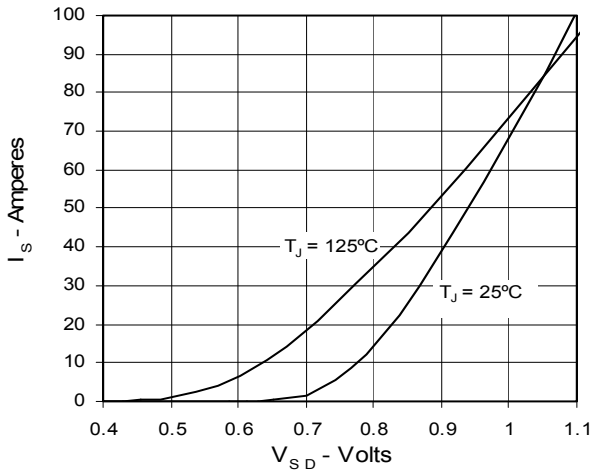
**Fig. 7. Input Admittance**



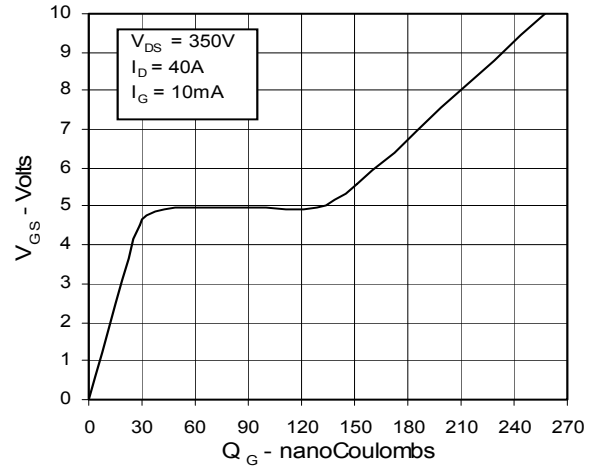
**Fig. 8. Transconductance**



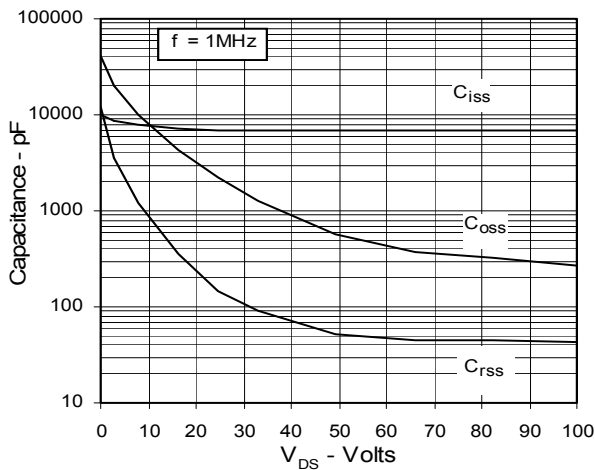
**Fig. 9. Source Current vs. Source-To-Drain Voltage**



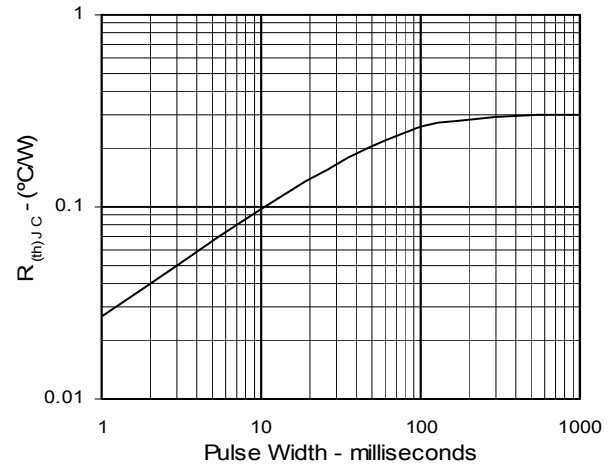
**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



**Fig. 12. Maximum Transient Thermal Resistance**



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