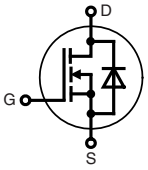
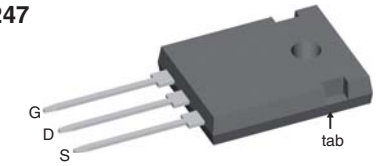
CoolMOS™ 1) Power MOSFET

V_{DSS} = 600 V
I_{D25} = 47 A
$R_{DS(on)\ max}$ = 70 mΩ

Low R_{DSon}, high V_{DSS}
Superjunction MOSFET



TO-247



E72873

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

Symbol	**Conditions**	**Characteristic Values** (T_{VJ} = 25°C, unless otherwise specified)			
		min.	**typ.**	**max.**	
R_{DSon}	V_{GS} = 10 V; I_D = I_{D100} ①		60	70	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 2 mA	2		4	V
I_{DSS}	V_{DS} = V_{DSS}; V_{GS} = 0 V; T_{VJ} = 25°C			25	µA
	T_{VJ} = 150°C			250	µA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V			±100	nA
C_{iss}	V_{GS} = 0 V; V_{DS} = 100 V		tbd		pF
C_{oss}	f = 1 MHz		tbd		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 350 V; I_D = 40 A		255	650	nC
Q_{gs}			30		nC
Q_{gd}			110		nC
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 380 V		20		ns
t_r	I_D = 47 A; R_G = 4.7 Ω		27		ns
$t_{d(off)}$			111		ns
t_f			10		ns
R_{thJC}				0.3	K/W

① Pulse test, t ≤ 300 µs, duty cycle d ≤ 2%

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.

Source-Drain Diode

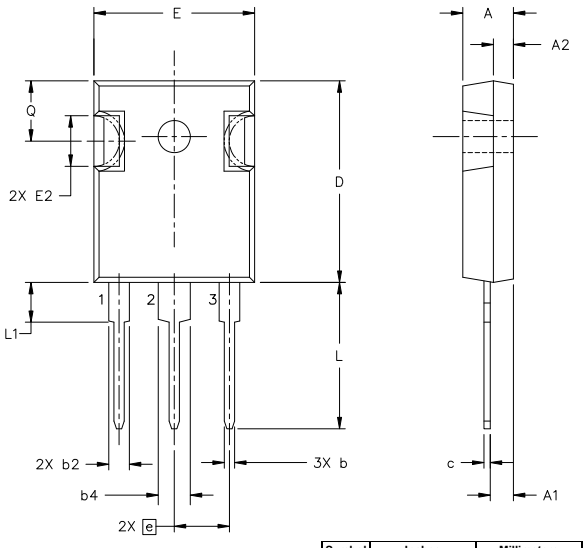
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V				A
V_{SD}	I_F = 40 A; V_{GS} = 0 V				V
t_{rr}	I_F = 40 A; -di_F/dt = 100 A/µs; V_R = 640 V				ns
Q_{RM}					µC
I_{RM}					A

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



Symbol	Inches min	Inches max	Millimeters min	Millimeters max
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
ØP	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
ØP1	-	0.291	-	7.39

Fig. 1. Output Characteristics @ 25 Deg. C

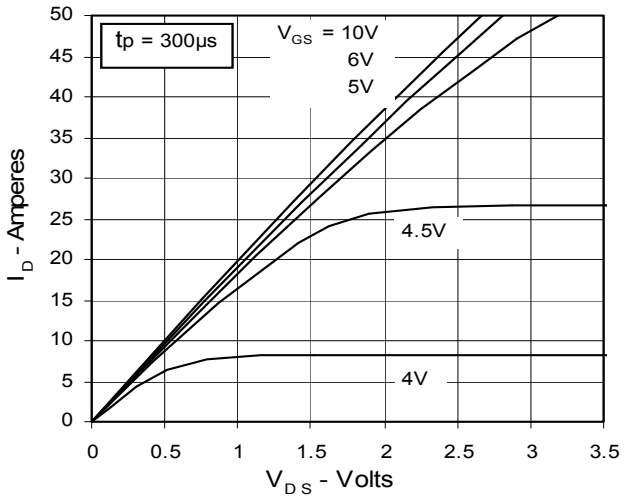


Fig. 2. Extended Output Characteristics @ 25 deg. C

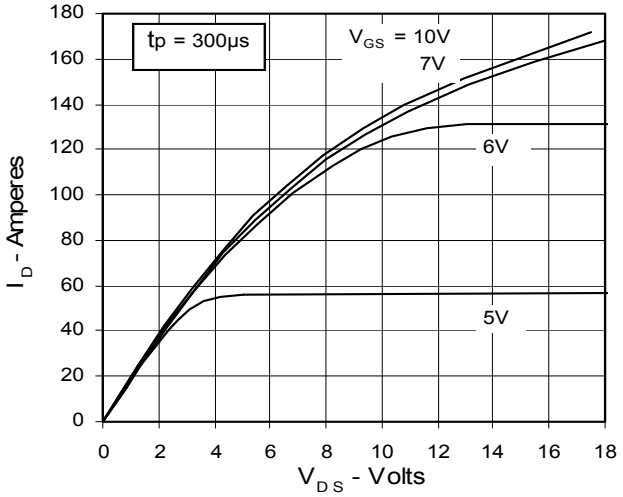


Fig. 3. Output Characteristics @ 125 Deg. C

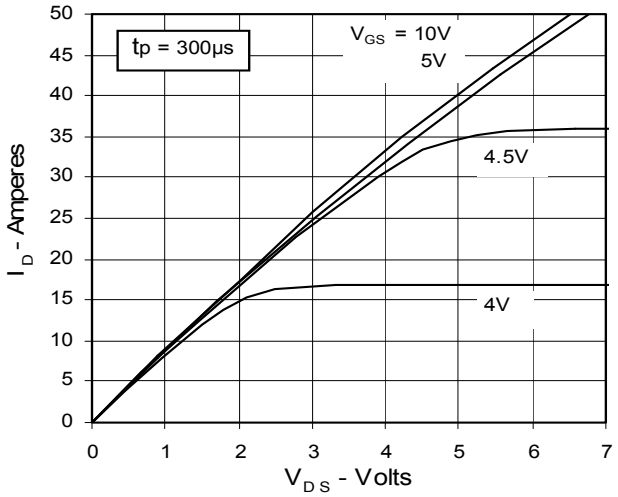


Fig. 4. $R_{DS(on)}$ Normalized to I_{D100} Value vs. Junction Temperature

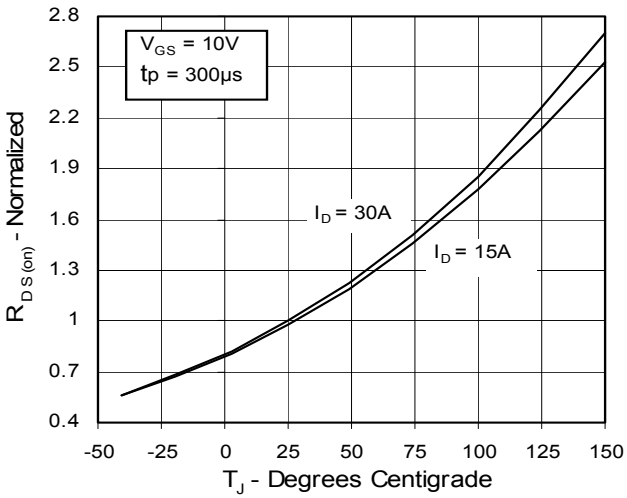


Fig. 5. $R_{DS(on)}$ Normalized to I_{D100} Value vs. I_D

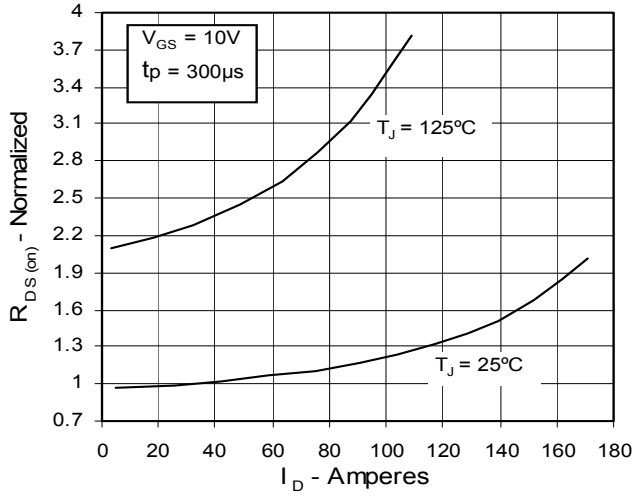


Fig. 6. Drain Current vs. Case Temperature

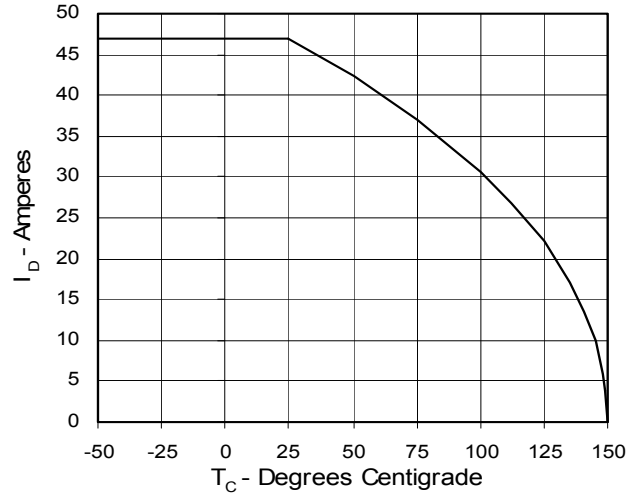


Fig. 7. Input Admittance

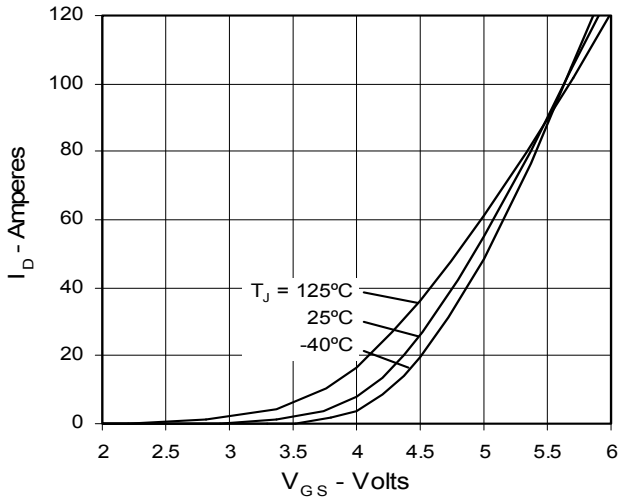


Fig. 8. Transconductance

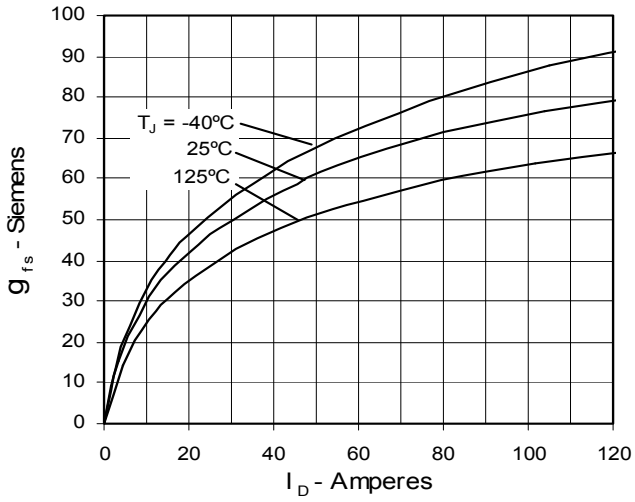


Fig. 9. Source Current vs. Source-To-Drain Voltage

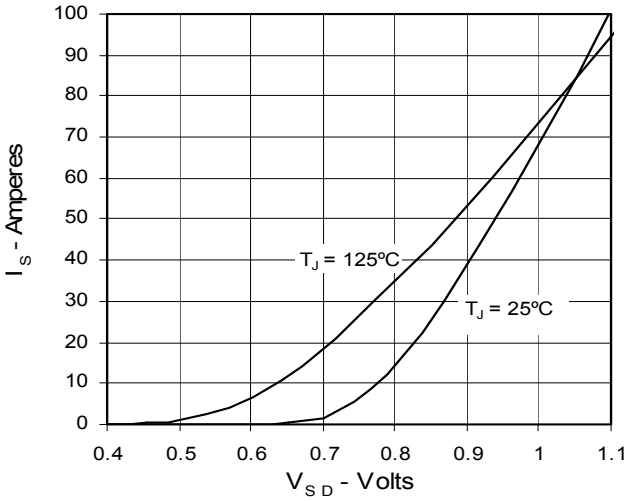


Fig. 10. Gate Charge

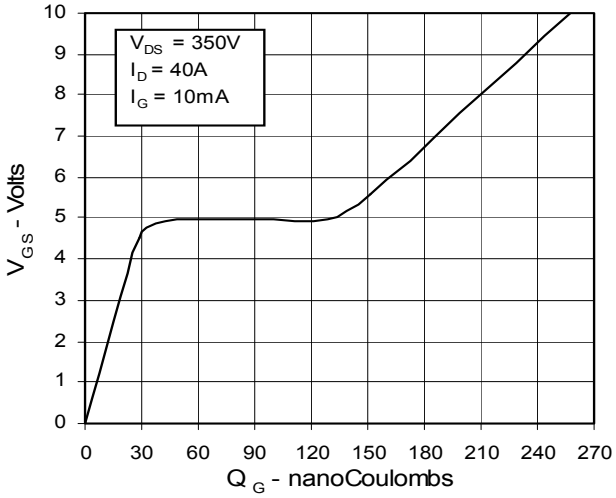


Fig. 11. Capacitance

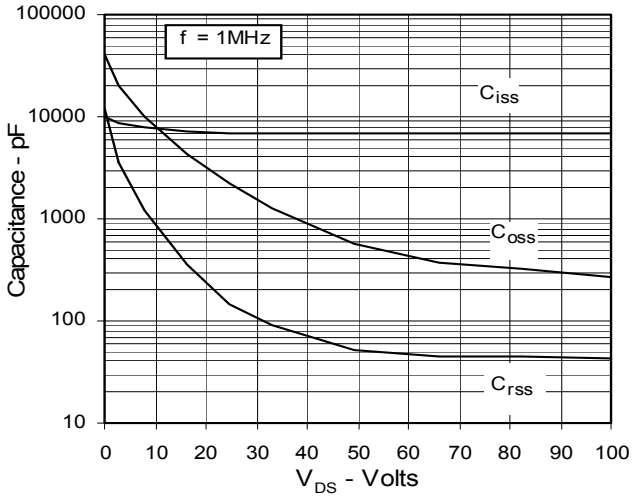
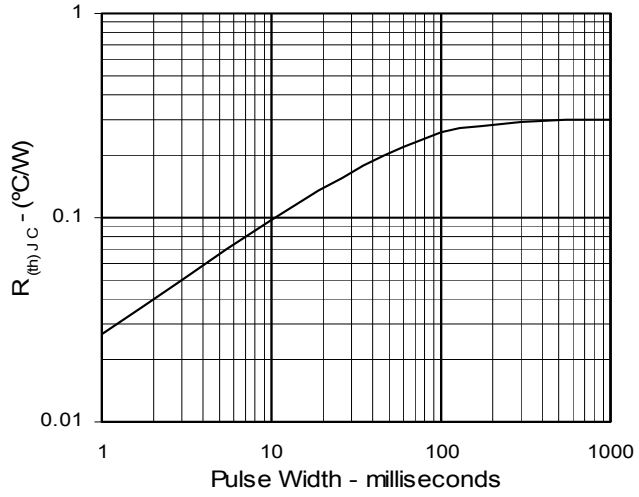


Fig. 12. Maximum Transient Thermal Resistance



20080523a