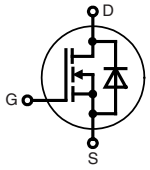
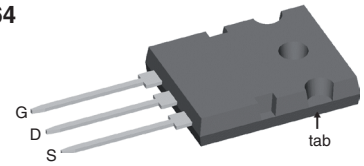
CoolMOS™ 1) Power MOSFET

V_{DSS} = 600 V
I_{D25} = 85 A
$R_{DS(on)\ max}$ = 36 mΩ

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



TO-264



E72873

MOSFET				
Symbol	**Conditions**		**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C		600	V
V_{GS}			± 20	V
I_{D25}	T_C = 25°C		85	A
I_{D100}	T_C = 100°C		55	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	1	mJ
dV/dt	MOSFET dV/dt ruggedness V_{DS} = 0...480 V		50	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			30	36	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 5.4 mA		2		4	V
I_{DSS}	V_{DS} = V_{DSS}; V_{GS} = 0 V	T_{VJ} = 25°C			50	µA
		T_{VJ} = 125°C			500	µA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V				±200	nA
C_{iss}	V_{GS} = 0 V; V_{DS} = 25 V			13.6		nF
C_{oss}	f = 1 MHz			4.4		nF
C_{rss}				290		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 350 V; I_D = 85 A			500	640	nC
Q_{gs}				50		nC
Q_{gd}				240		nC
$t_{d(on)}$	V_{GS} = 13 V; V_{DS} = 380 V			20		ns
t_r	I_D = 85 A; R_G = 1.0 Ω			27		ns
$t_{d(off)}$				110		ns
t_f				10		ns
R_{thJC}					0.18	K/W

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

Features

- 3rd generation CoolMOS™ 1) 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.

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Source-Drain Diode

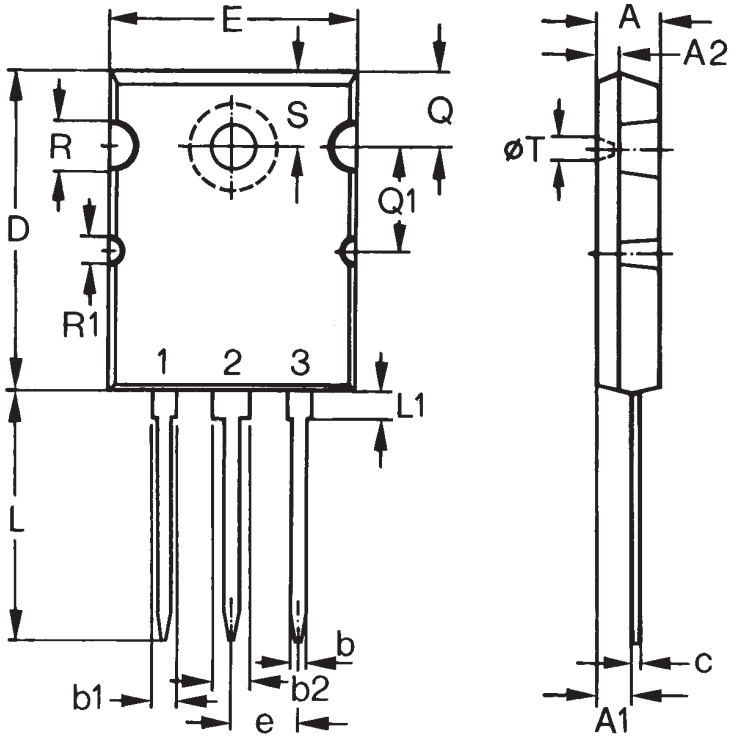
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			85	A
I_{SM}				250	A
V_{SD}	I_F = 85 A; V_{GS} = 0 V			1.2	V
t_{rr}	I_F = 85 A; -di_F/dt = 200 A/µs; V_R = 350 V		580		ns
Q_{RM}			46		µC
I_{RM}			140		A

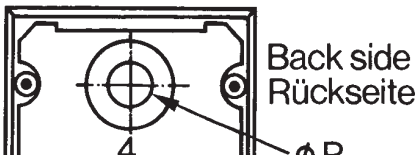
Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}		-55...+150	°C
M_d	mounting torque	0.8 ... 1.2	Nm

Symbol	Conditions	Characteristic Values min.	typ.	max.	
R_{thCH}	with heatsink compound		0.15		K/W
Weight			10		g

TO-264 Outline





SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
C	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.193	.201	4.90	5.10
L1	.088	.096	2.24	2.44
L2	.075	.083	1.90	2.10
L3	.000	.004	0.00	0.10
∅P	.122	.138	3.10	3.51
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
∅R	.155	.187	3.94	4.75
∅R1	.085	.093	2.16	2.36
S	.243	.253	6.17	6.43

NOTE 1. This drawing meets all dimension requirement of JEDEC outline TO-264AA except L, L1, L2, L3.
2. All metal surface are solder plated except trimmed area.

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Fig. 1. Output Characteristics @ 25 Deg. C

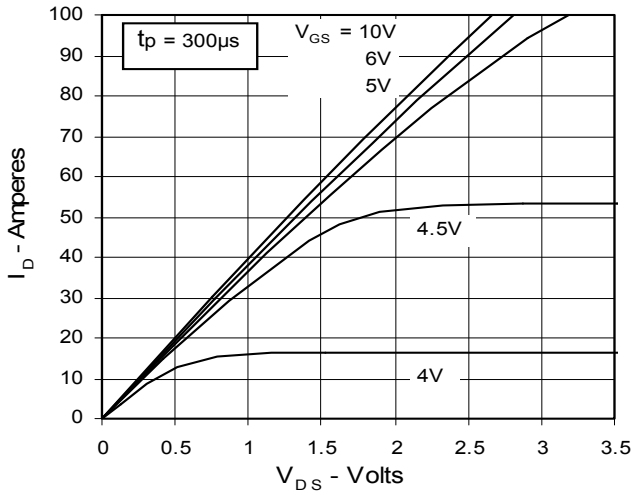

Fig. 2. Extended Output Characteristics @ 25 deg. C

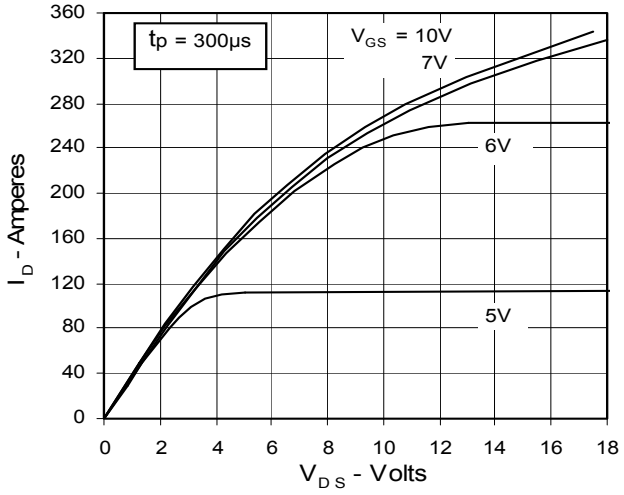

Fig. 3. Output Characteristics @ 125 Deg. C

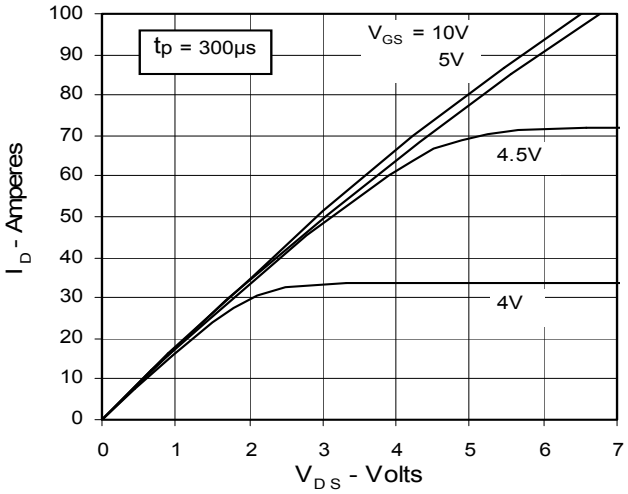

Fig. 4. $R_{DS(on)}$ Normalized to I_{D100} Value vs. Junction Temperature

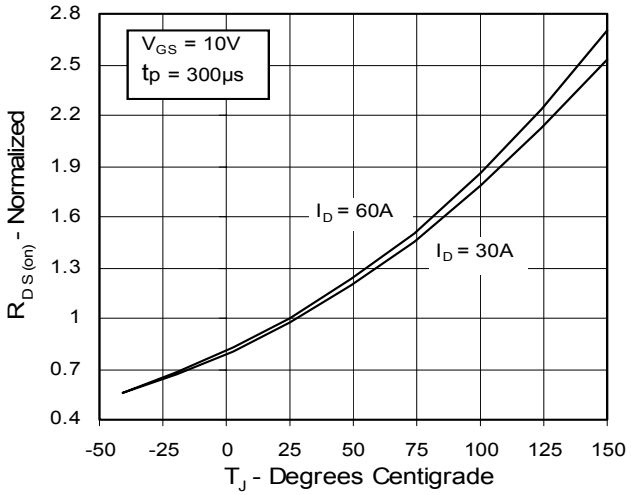

Fig. 5. $R_{DS(on)}$ Normalized to I_{D100} Value vs. I_D

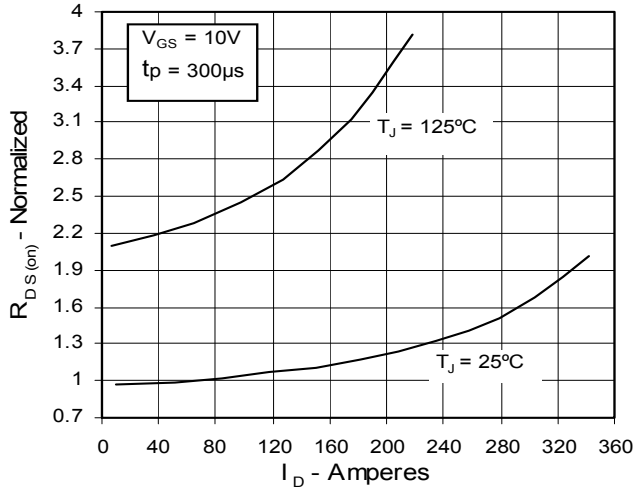

Fig. 6. Drain Current vs. Case Temperature

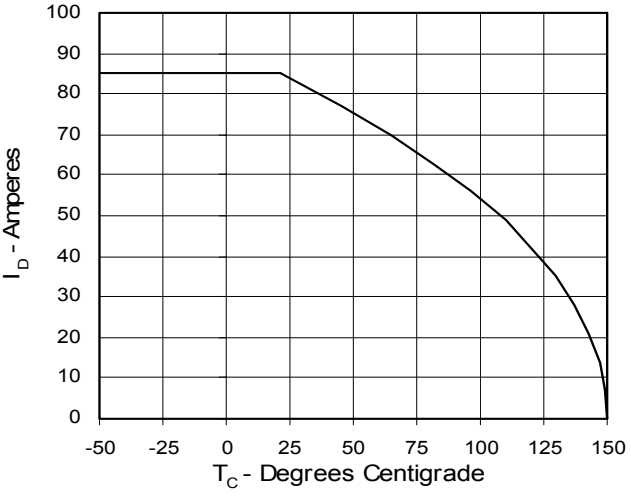

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Fig. 7. Input Admittance

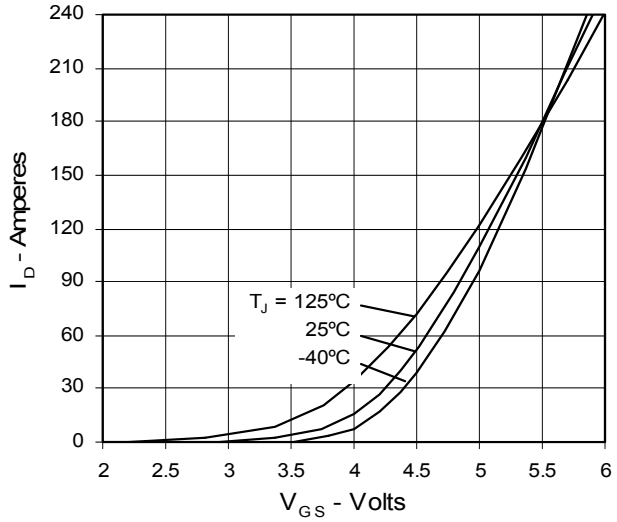


Fig. 8. Transconductance

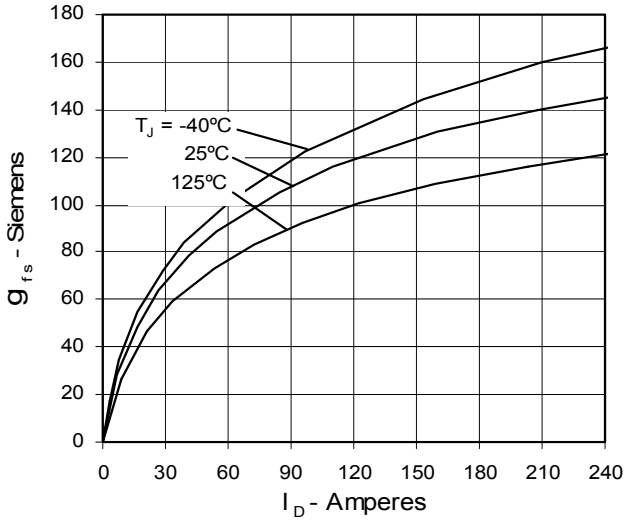


Fig. 9. Source Current vs. Source-To-Drain Voltage

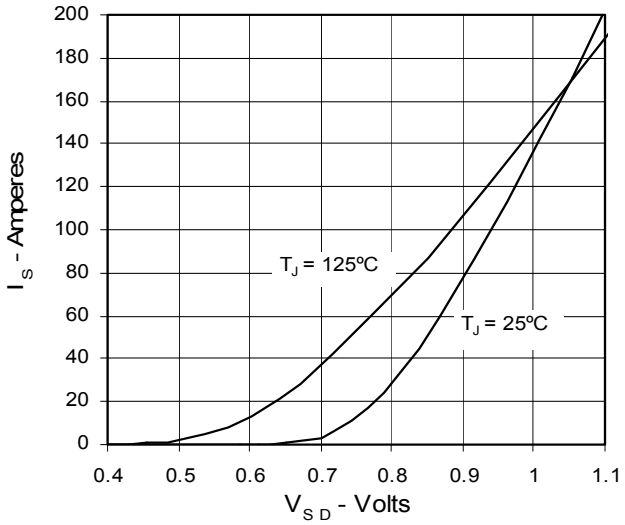


Fig. 10. Gate Charge

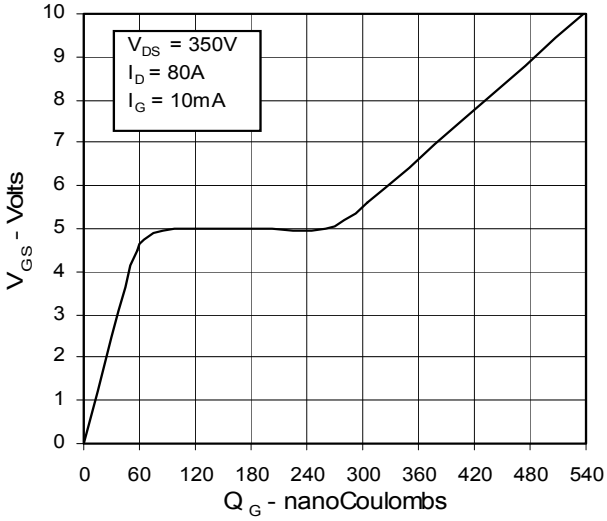


Fig. 11. Capacitance

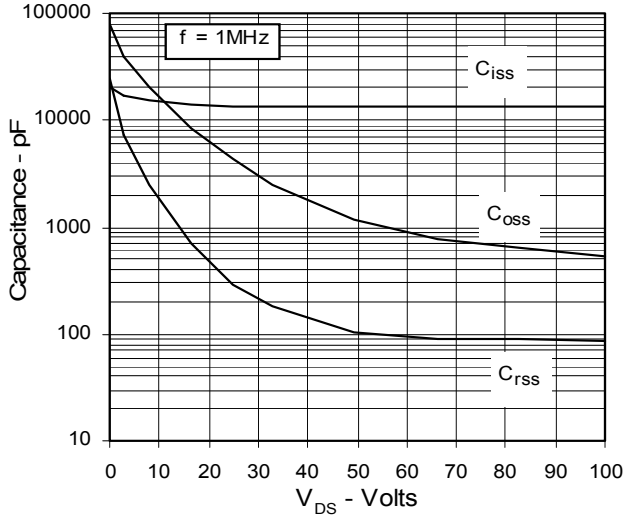
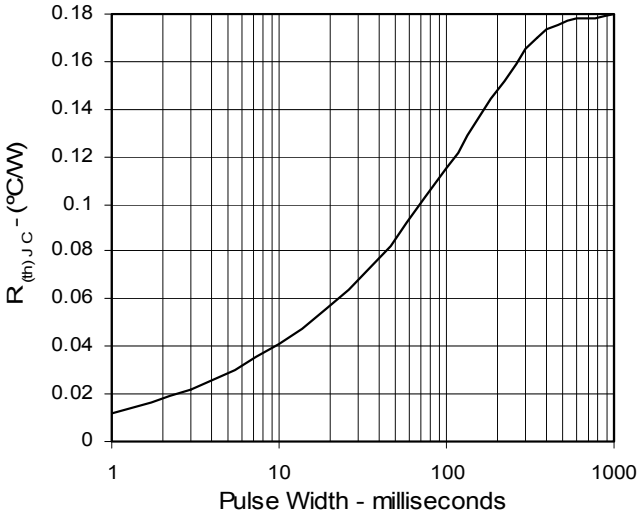


Fig. 12. Maximum Transient Thermal Resistance



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