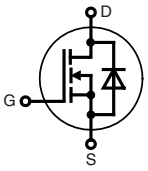
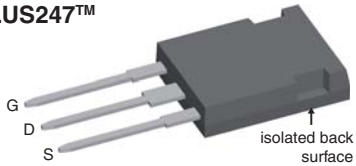
CoolMOS™ [1] Power MOSFET

V_{DSS} = 600 V
I_{D25} = 47 A
$R_{DS(on)\ max}$ = 45 mΩ

Electrically isolated back surface
2500 V electrical isolation
N-Channel Enhancement Mode
Low R_{DSon}, high V_{DSS} MOSFET
Ultra low gate charge



ISOPLUS247™



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_{D90}	T_C = 90°C		32	A
E_{AS}	single pulse	I_D = 11 A; T_C = 25°C	1950	mJ
E_{AR}	repetitive	I_D = 11 A; T_C = 25°C	3	mJ
dV/dt	MOSFET dV/dt ruggedness V_{DS} = 0...480 V		50	V/ns

Symbol	**wiConditions**		**Characteristic Values** (T_{VJ} = 25°C, unless otherwise specified)			
			min.	**typ.**	**max.**	
R_{DSon}	V_{GS} = 10 V; I_D = 44 A			40	45	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 3 mA		2.5	3	3.5	V
I_{DSS}	V_{DS} = V_{DSS}; V_{GS} = 0 V	T_{VJ} = 25°C			10	µA
		T_{VJ} = 150°C		50		µA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V				100	nA
C_{iss}	V_{GS} = 0 V; V_{DS} = 100 V			6800		pF
C_{oss}	f = 1 MHz			320		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 44 A			150	190	nC
Q_{gs}				35		nC
Q_{gd}				50		nC
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 400 V; I_D = 44 A; R_G = 3.3 Ω			30		ns
t_r				20		ns
$t_{d(off)}$				100		ns
t_f				10		ns
R_{thJC}					0.45	K/W
R_{thCH}	with heatsink compound			0.25		K/W

Features

- Silicon chip on Direct-Copper-Bond substrate
  - high power dissipation
  - isolated mounting surface
  - 2500 V electrical isolation
  - low drain to tab capacitance (< 30 pF)
- Fast CoolMOS™ [1] power MOSFET 4th generation
  - high blocking capability
  - lowest resistance
  - avalanche rated for unclamped inductive switching (UIS)
  - low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

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

Advantages

- Easy assembly: no screws or isolation foils required
- Space savings
- High power density
- High reliability

[1] CoolMOS™ is a trademark of Infineon Technologies AG.

Source-Drain Diode

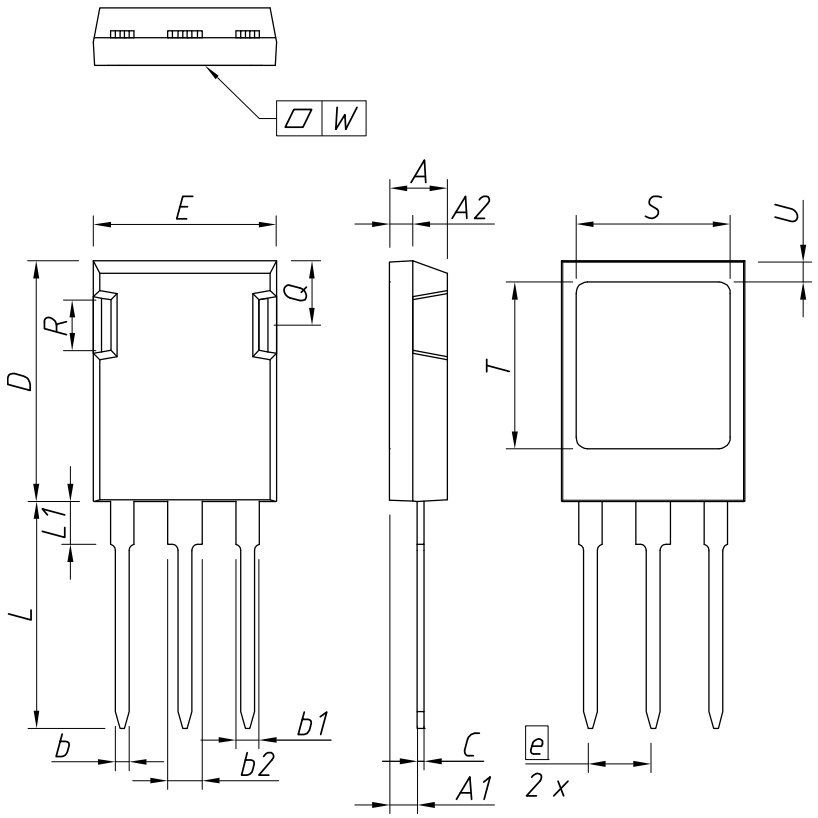
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			44	A
V_{SD}	I_F = 44 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr}	I_F = 44 A; -di_F/dt = 100 A/µs; V_R = 400 V		600		ns
Q_{RM}			17		µC
I_{RM}			60		A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}	storage	-55...+150	°C
V_{ISOL}	I_{ISOL} = 1 mA, 50/60 Hz, t = 1 min	2500	V~
F_C	mounting force with clip	20-120	N

Symbol	Conditions	Characteristic Values min.	typ.	max.	
C_P	coupling capacity between shorted pins and mounting tab in the case		30		pF
d_S, d_A	pin - pin	tbd			mm
d_S, d_A	pin - backside metal	tbd			mm
Weight			6		g

ISOPLUS247™ Outline



DIM.	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	4,83	5,21	0,190	0,205
A1	2,29	2,54	0,090	0,100
A2	1,91	2,16	0,075	0,085
b	1,14	1,40	0,045	0,055
b1	1,91	2,15	0,075	0,085
b2	2,92	3,20	0,115	0,126
C	0,61	0,83	0,024	0,033
D	20,80	21,34	0,819	0,840
E	15,75	16,13	0,620	0,635
e	5,45 BSC		0,215 BSC	
L	19,81	20,60	0,780	0,811
L1	3,81	4,38	0,150	0,172
Q	5,59	6,20	0,220	0,244
R	4,32	4,85	0,170	0,191
S	13,21	13,72	0,520	0,540
T	15,75	16,26	0,620	0,640
U	1,65	2,03	0,065	0,080
W	–	0,10	–	0,004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite
The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und L_{max}.
This drawing will meet all dimensions requiarement of JEDEC outline TO-247 AD except screw hole and except L_{max}.

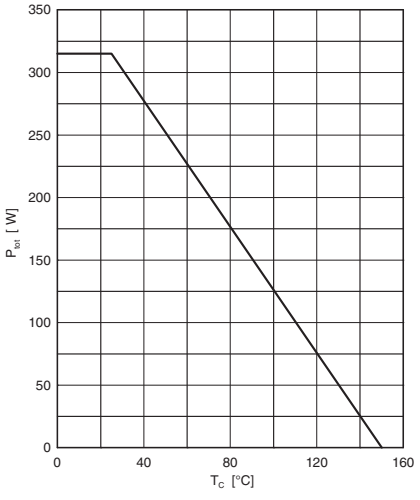


Fig. 1 Typ. power dissipation

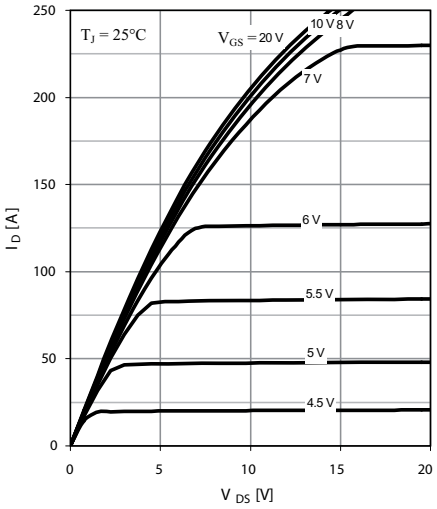


Fig. 2 Typ. output characteristics

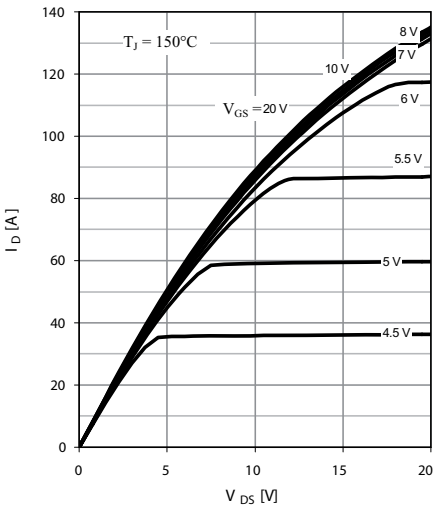


Fig. 3 Typ. output characteristics

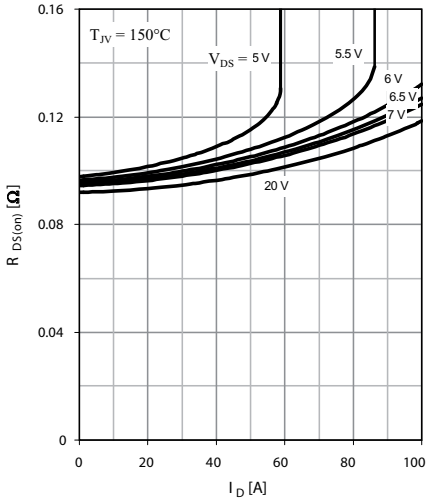


Fig. 4 Typ. drain-source on-state resistance

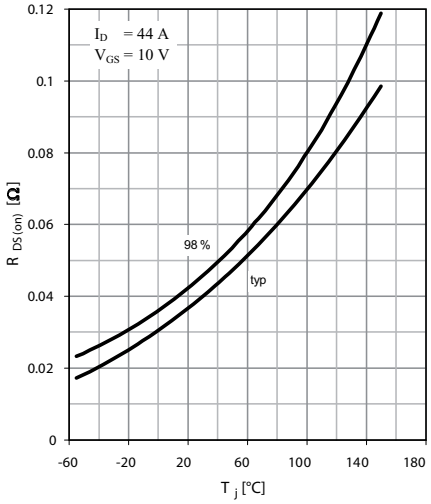


Fig. 5 Drain-source on-state resistance

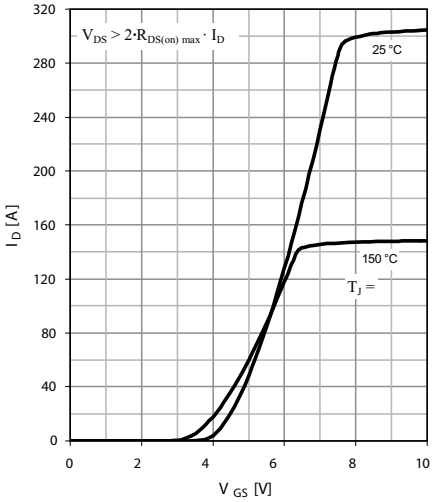


Fig. 6 Typ. transfer characteristics

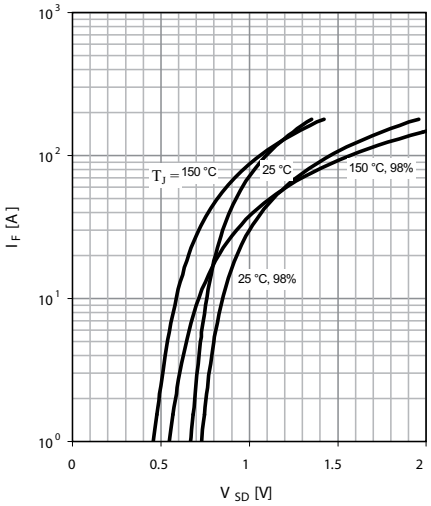


Fig. 7 Forward characteristic of reverse diode

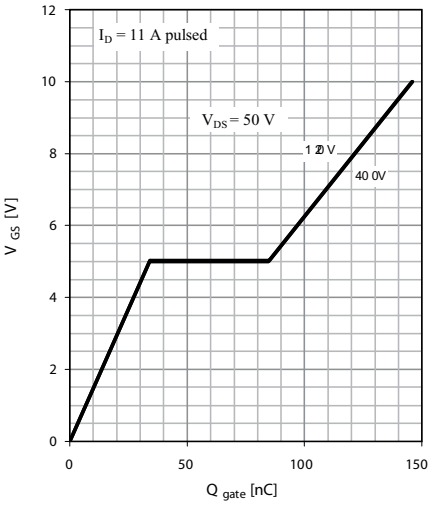


Fig. 8 Typ. gate charge

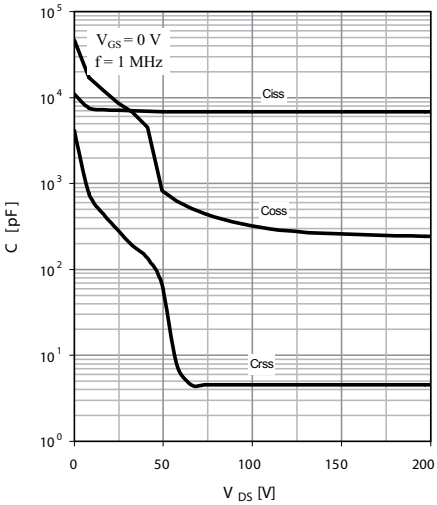


Fig. 9 Typ. capacitances

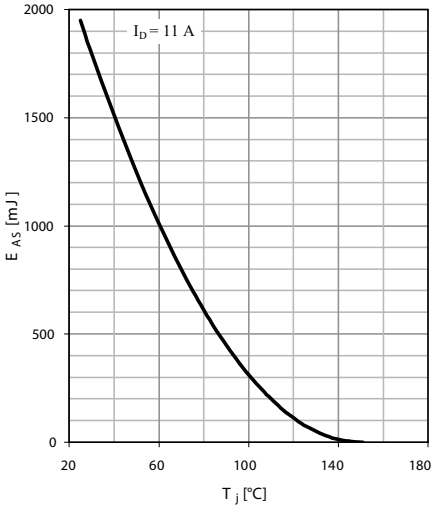


Fig. 9 Avalanche energy

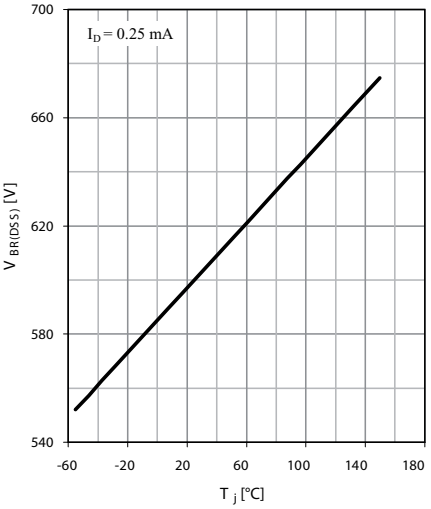


Fig. 10 Drain-source breakdown voltage

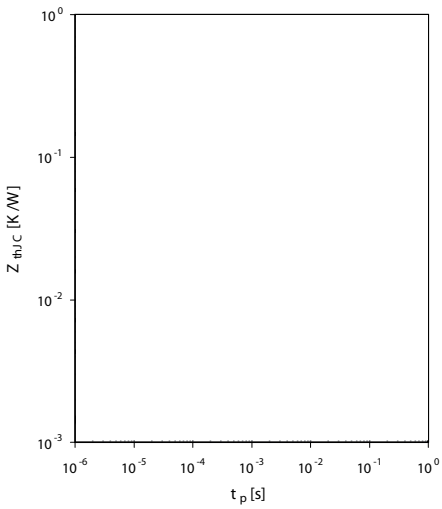


Fig. 12 Max. transient thermal impedance