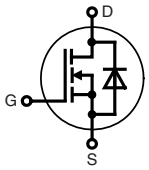
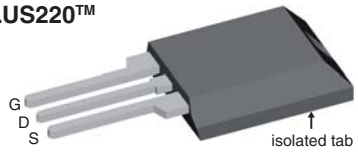
CoolMOS™ [1] Power MOSFET

V_{DSS} = 600 V
I_{D25} = 15 A
$R_{DS(on)\ max}$ = 190 mΩ

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



ISOPLUS220™



E72873

MOSFET			
Symbol	**Conditions**	**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C	600	V
V_{GS}		± 20	V
I_{D25}	T_C = 25°C	15	A
I_{D90}	T_C = 90°C	10.5	A
E_{AS}	single pulse; I_D = 10 A; T_C = 25°C	690	mJ
E_{AR}	repetitive; I_D = 20 A; T_C = 25°C	1	mJ

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified)	min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; I_D = 16 A			160	190	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 1 mA		2.1		3.9	V
I_{DSS}	V_{DS} = 600 V; 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} = 25 V			2400		pF
C_{oss}	f = 1 MHz			780		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 350 V; I_D = 20 A			87	114	nC
Q_{gs}				11		nC
Q_{gd}				33		nC
$t_{d(on)}$	V_{GS} = 13 V; V_{DS} = 380 V			10		ns
t_r	I_D = 21 A; R_G = 3.3 Ω; T_{VJ} = 125°C			5		ns
$t_{d(off)}$				67		ns
t_f				4.5		ns
R_{thJC}					1	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)
- CoolMOS™ [1] power MOSFET
  - 3rd 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

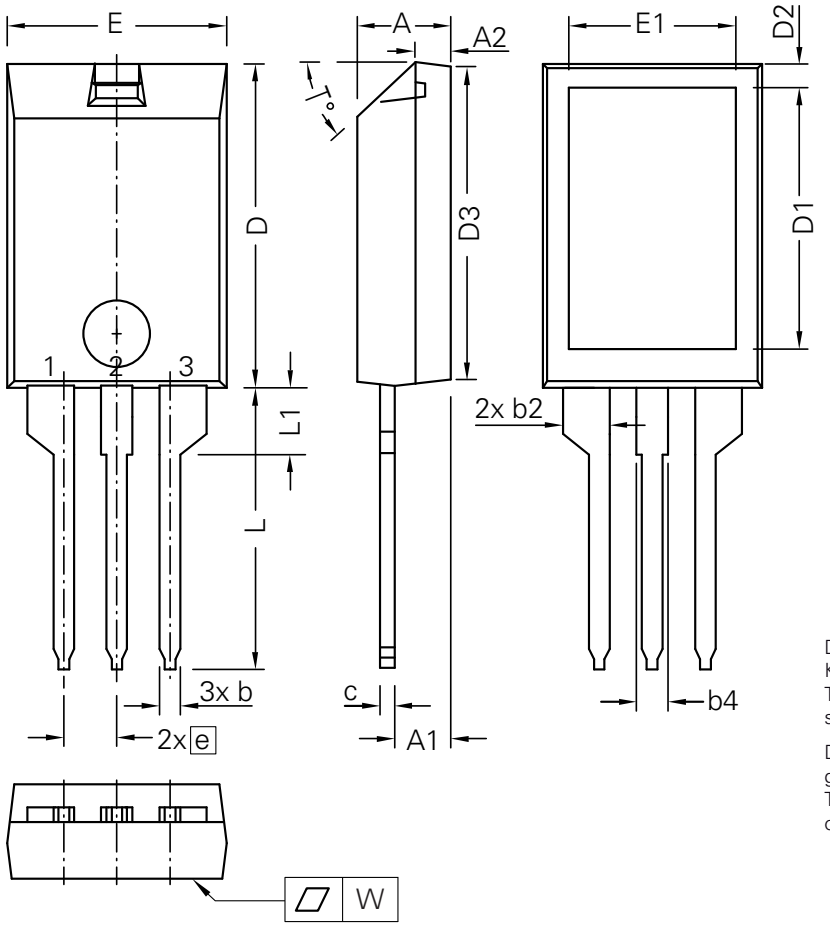
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified)			
		min.	typ.	max.	
I_S	V_{GS} = 0 V			20	A
V_{SD}	I_F = 16 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr}	I_F = 20 A; -di_F/dt = 100 A/µs; V_R = 480 V		500	800	ns
Q_{RM}			11		µC
I_{RM}			70		A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}	storage	-55...+150	°C
V_{ISOL}	RMS leads-to-tab, 50/60 Hz, f = 1 minute	2500	V~
F_C	mounting force	11-65 / 2.4-11	N/lb

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
R_{thCH}	with heatsink compound		0.3		K/W
Weight			2.7		g

Outlines ISOPLUS220



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.00	5.00	0.157	0.197
A1	2.50	3.00	0.098	0.118
A2	1.60	1.80	0.063	0.071
b	0.90	1.30	0.035	0.051
b2	2.20	2.55	0.087	0.100
b4	1.25	1.65	0.049	0.065
c	0.70	1.00	0.028	0.039
D	15.00	16.00	0.591	0.630
D1	12.00	13.00	0.472	0.512
D2	1.10	1.50	0.043	0.059
D3	14.90	15.50	0.587	0.610
E	10.00	11.00	0.394	0.433
E1	7.50	8.50	0.295	0.335
e	2.54 BSC		0.100 BSC	
L	13.00	14.50	0.512	0.571
L1	3.00	3.50	0.118	0.138
T°	42.5	47.5		
W	-	0.1	-	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-273 gemäß JEDEC außer D und D1 .
This drawing will meet all dimensions requiarement ofJEDEC outline TO-273 except D and D1.

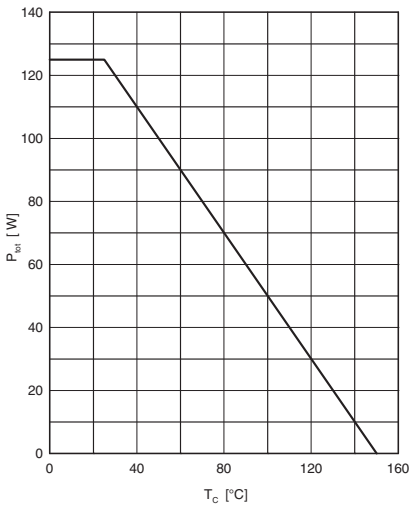


Fig. 1 Power dissipation

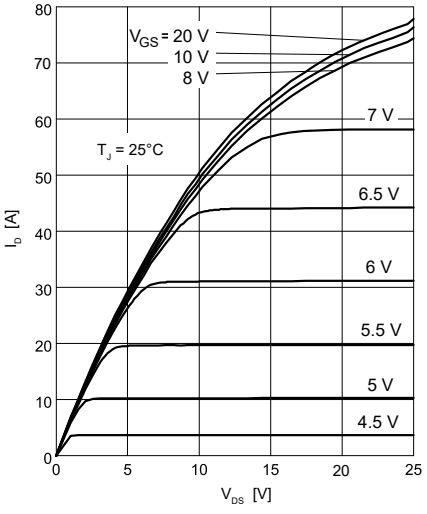


Fig. 2 Typ. output characteristics

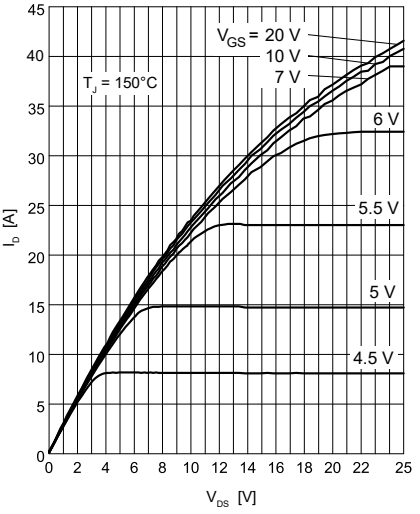


Fig. 3 Typ. output characteristics

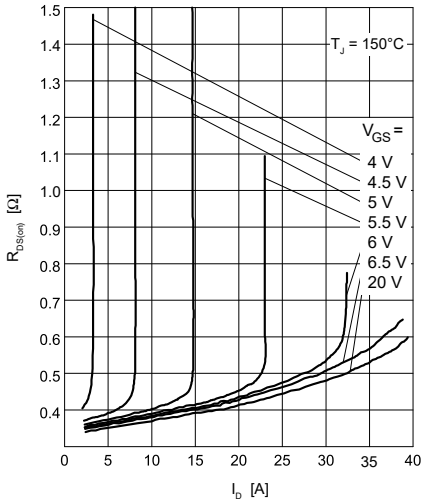


Fig. 4 Typ. drain-source on-state resistance

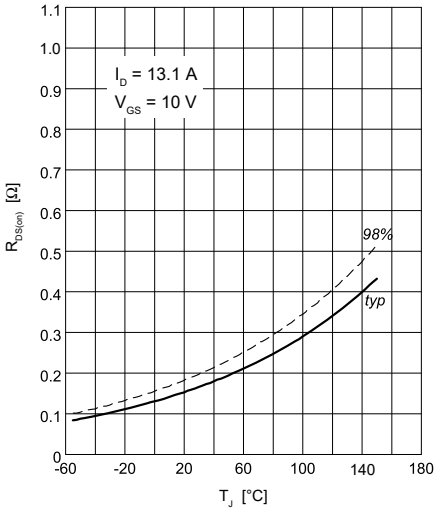


Fig. 5 Drain-source on-state resistance

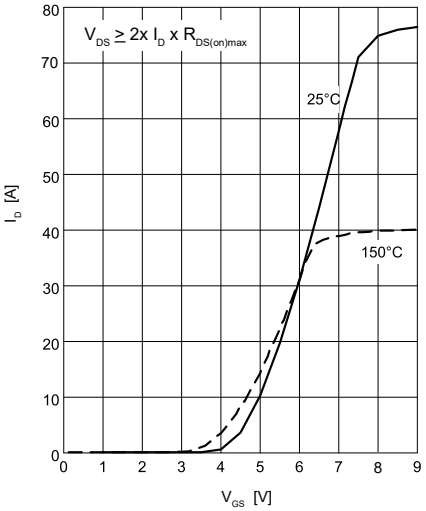


Fig. 6 Typ. transfer characteristics

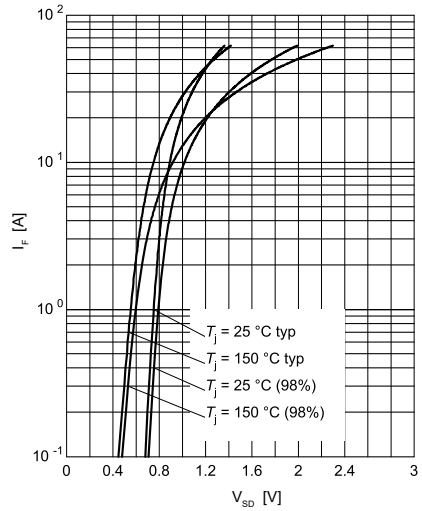


Fig. 7 Forward characteristic of reverse diode

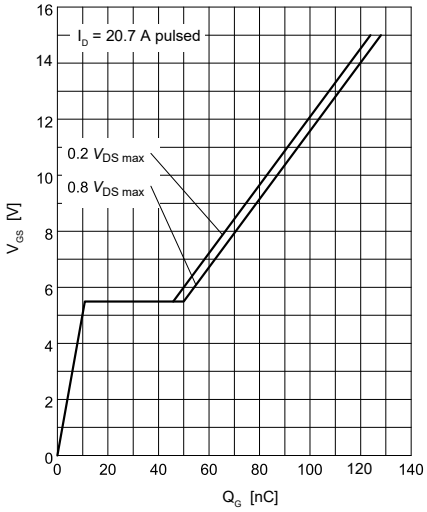


Fig. 8 Typ. gate charge

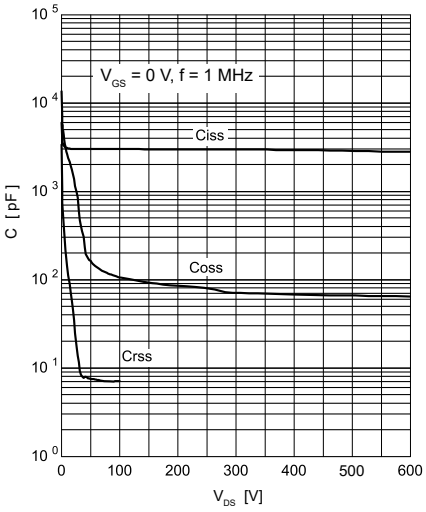


Fig. 9 Typ. capacitances

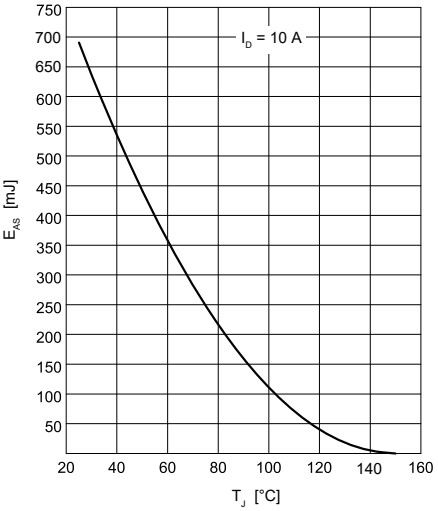


Fig. 10 Avalanche energy

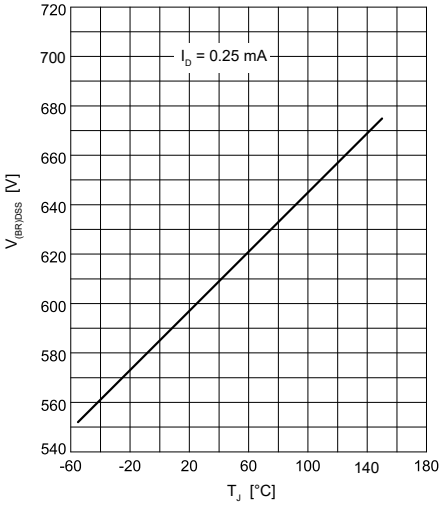


Fig. 11 Drain-source breakdown voltage