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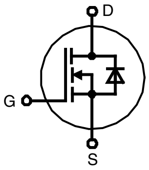
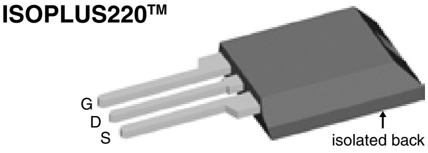
CoolMOS™ 1) Power MOSFET

I_{D25} = 23 A
V_{DSS} = 600 V
$R_{DS(on)\ max}$ = 0.1 Ω

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

Preliminary data

MOSFET			
Symbol	**Conditions**	**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C	600	V
V_{GS}		± 20	V
I_{D25} I_{D90}	T_C = 25°C T_C = 90°C	23 16	A A
E_{AS} E_{AR}	single pulse repetitive } I_D = 11 A; T_C = 25°C	800 1.2	mJ 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 = 18 A		90	100	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 1.2 mA	2.5	3	3.5	V
I_{DSS}	V_{DS} = 600 V; V_{GS} = 0 V T_{VJ} = 25°C T_{VJ} = 125°C		 50	5	μA μA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V			100	nA
C_{iss} C_{oss}	V_{GS} = 0 V; V_{DS} = 100 V f = 1 MHz		2800 130		pF pF
Q_g Q_{gs} Q_{gd}	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 18 A		60 14 20	80	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	V_{GS} = 10 V; V_{DS} = 400 V I_D = 18 A; R_G = 3.3 Ω		10 5 60 5		ns ns ns ns
R_{thJC}				0.85	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

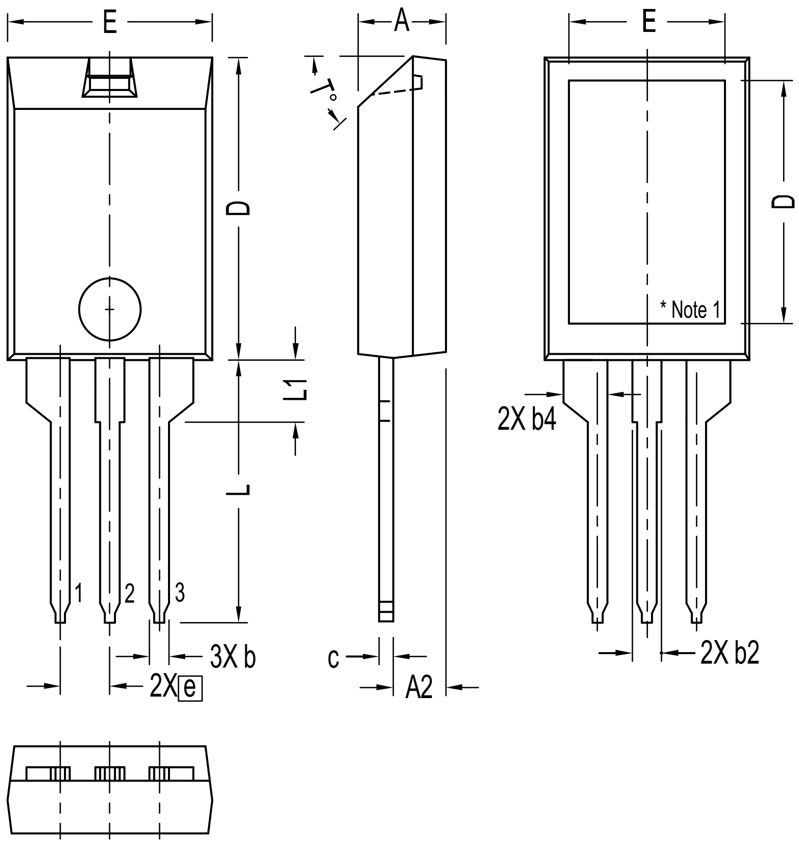
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			16	A
V_{SD}	I_F = 16 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr} Q_{RM} I_{RM}	I_F = 16 A; -di_F/dt = 100 A/µs; V_R = 400 V		450 12 70		ns µC A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ} T_{stg}	operating storage	-55...+150 -55...+150	°C °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		0.28		K/W
Weight			3.1		g

ISOPLUS220™ Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T°			42.5°	47.5°

NOTE:
1. Bottom heatsink is electrically isolated from Pin 1, 2, or 3.
2. This drawing will meet dimensional requirement of JEDEC SS Product Outline TO-273 except D and D1 dimension.

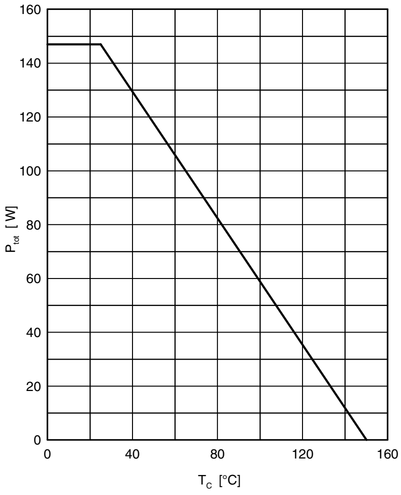


Fig. 1 Power dissipation

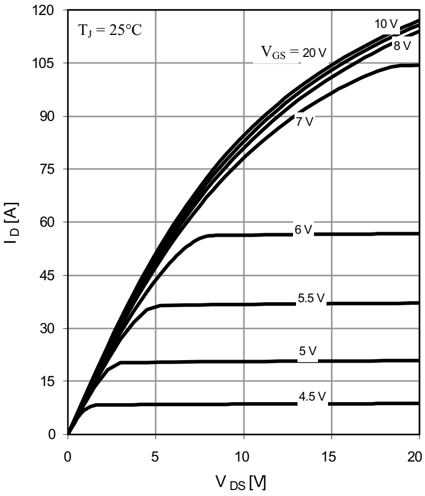


Fig. 2 Typ. output characteristics

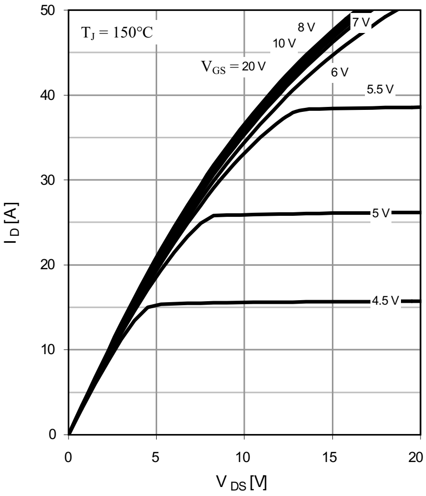


Fig. 3 Typ. output characteristics

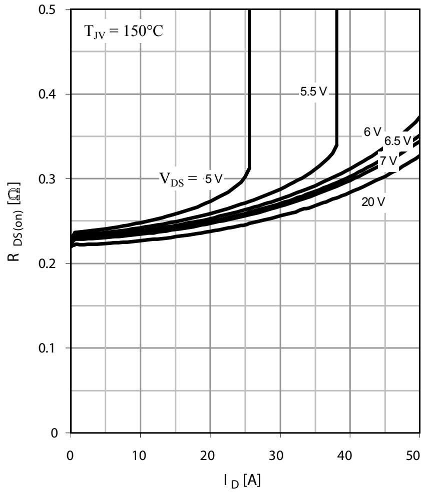


Fig. 4 Typ. drain-source on-state resistance characteristics

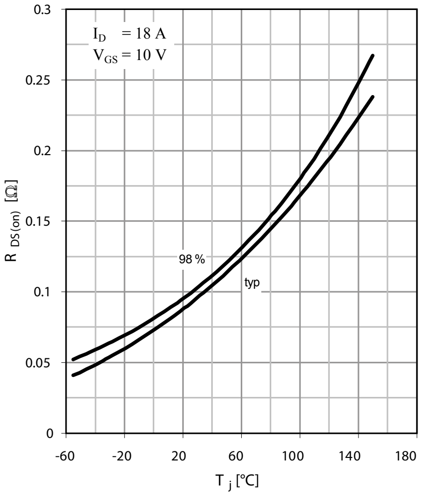


Fig. 5 Drain-source on-state resistance

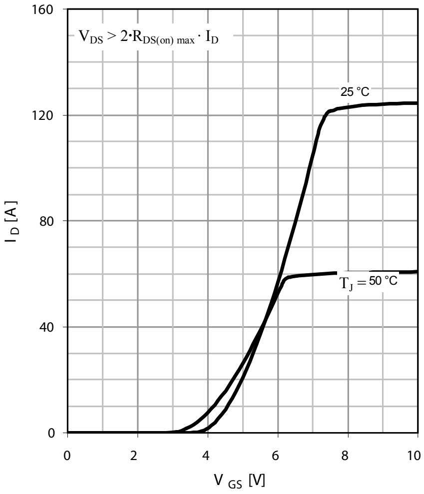


Fig. 6 Typ. transfer characteristics

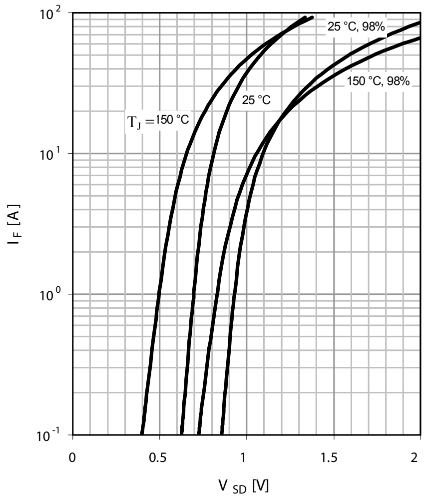


Fig. 7 Forward characteristic of reverse diode

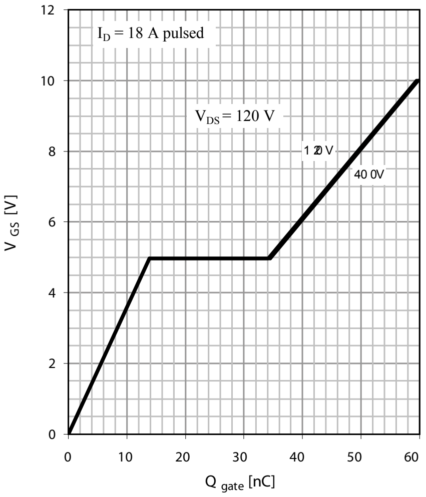


Fig. 8 Typ. gate charge

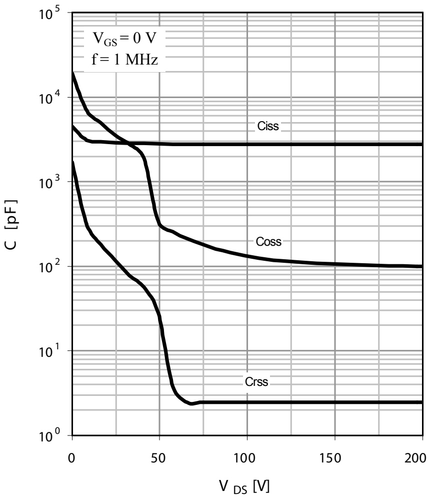


Fig. 9 Typ. capacitances

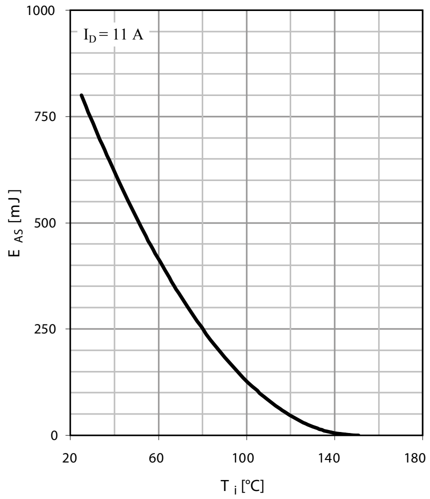


Fig. 10 Avalanche energy

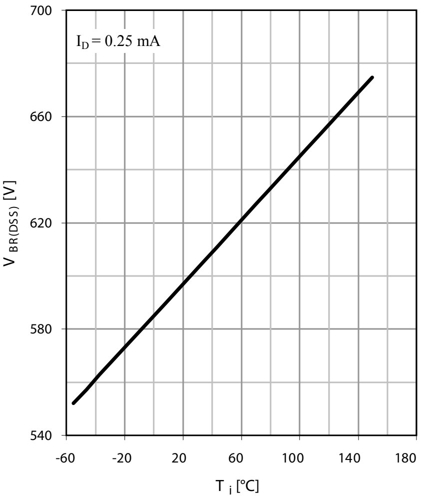


Fig. 11 Drain-source breakdown voltage

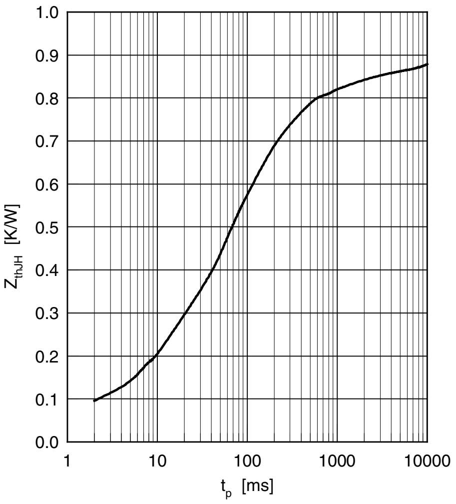


Fig. 12 Typ. transient thermal impedance with heat transfer paste