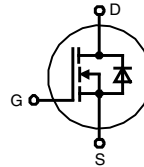
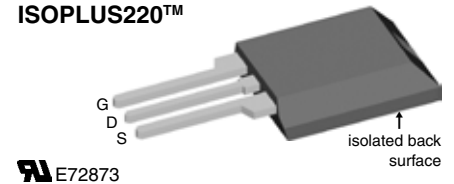


# CoolMOS™ 1) Power MOSFET

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



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

**ISOPLUS220™**


Preliminary data

MOSFET			
Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C}$	600	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	23	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	16	A
$E_{AS}$ $E_{AR}$	single pulse repetitive } $I_D = 11 \text{ A}; T_C = 25^{\circ}\text{C}$	800 1.2	mJ mJ
$dV/dt$	MOSFET $dV/dt$ ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

**Features**

- Silicon chip on Direct-Copper-Bond substrate
  - high power dissipation
  - isolated mounting surface
  - 2500 V electrical isolation
  - low drain to tab capacitance ( $< 30 \text{ pF}$ )
- Fast CoolMOS™ 1) power MOSFET 4<sup>th</sup> 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

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^{\circ}\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 18 \text{ A}$		90	100	$\text{m}\Omega$
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 1.2 \text{ mA}$	2.5	3	3.5	V
$I_{DSS}$	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			5	$\mu\text{A}$
			50		$\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
$C_{iss}$ $C_{oss}$	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		2800 130		pF pF
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 18 \text{ A}$		60 14 20	80	nC nC nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 18 \text{ A}; R_G = 3.3 \Omega$		10 5 60 5		ns ns ns ns
$R_{thJC}$				0.85	K/W

**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

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

**Source-Drain Diode**

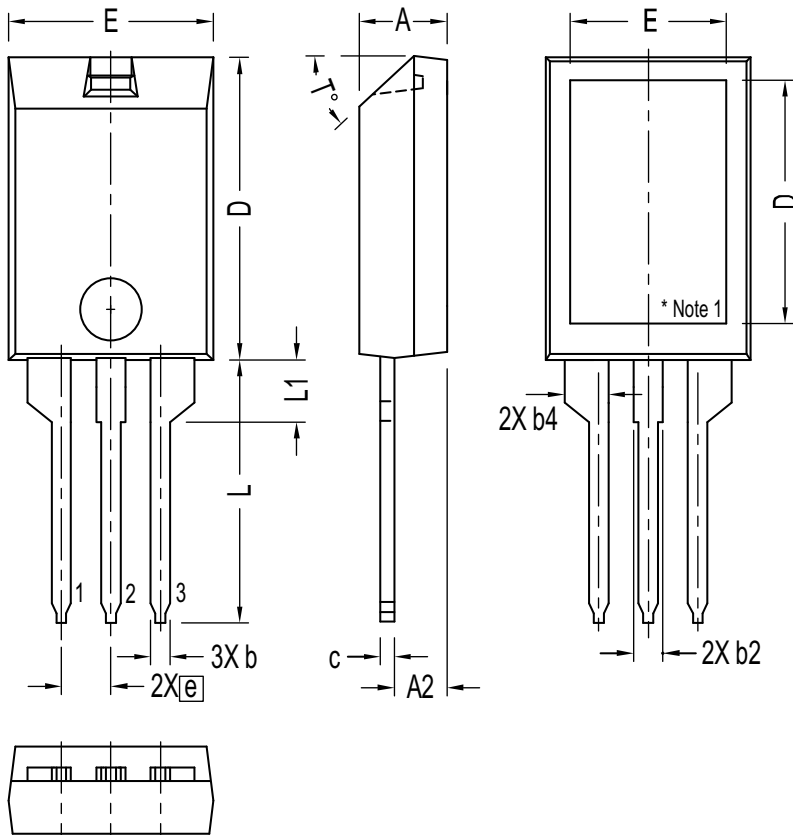
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			16	A
$V_{SD}$	$I_F = 16\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	$I_F = 16\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{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

**Component**

Symbol	Conditions	Maximum Ratings		
$T_{VJ}$	operating	-55...+150		$^{\circ}\text{C}$
$T_{stg}$	storage	-55...+150		$^{\circ}\text{C}$
$V_{ISOL}$	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
<b>Weight</b>			3.1		g

## ISOPLUS220™ Outline



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.

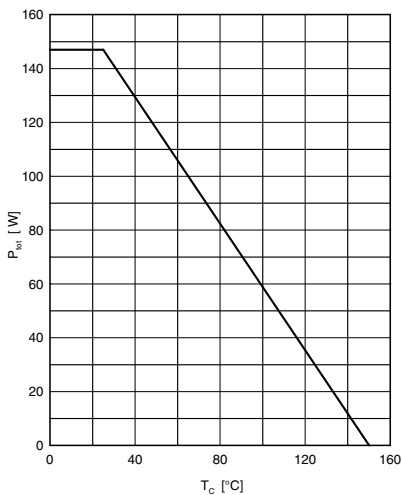


Fig. 1 Power dissipation

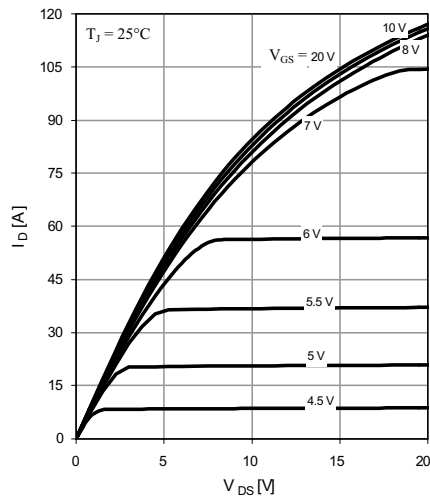


Fig. 2 Typ. output characteristics

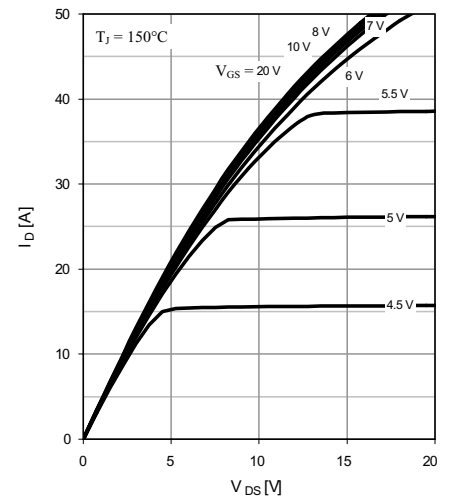


Fig. 3 Typ. output characteristics

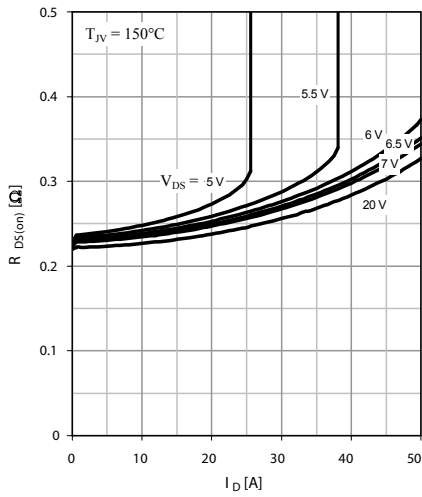


Fig. 4 Typ. drain-source on-state resistance characteristics

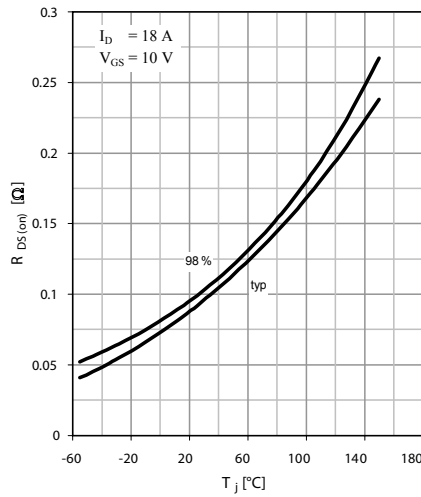


Fig. 5 Drain-source on-state resistance

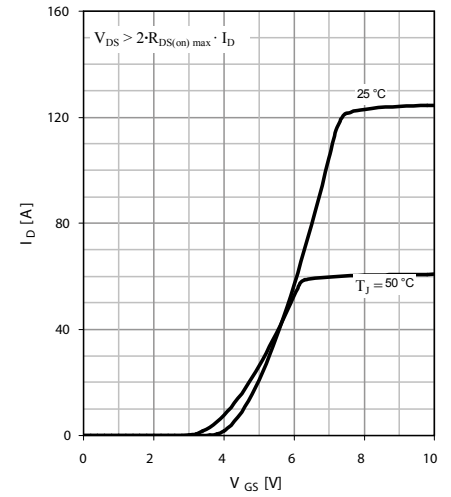


Fig. 6 Typ. transfer characteristics

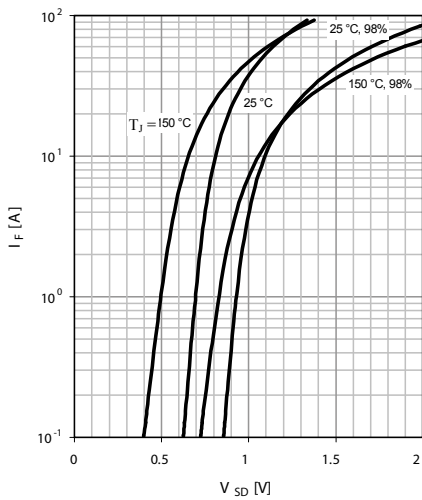


Fig. 7 Forward characteristic of reverse diode

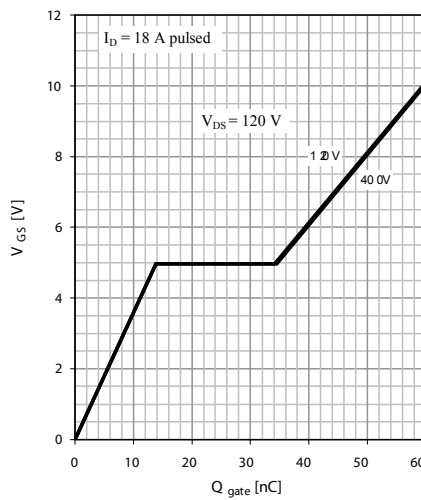


Fig. 8 Typ. gate charge

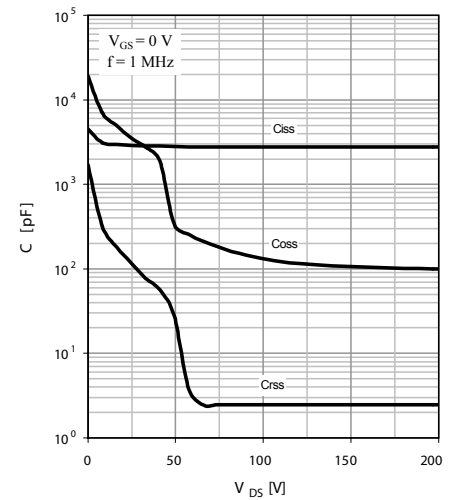


Fig. 9 Typ. capacitances

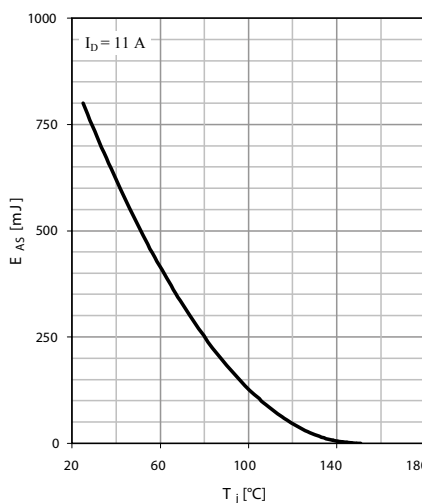


Fig. 10 Avalanche energy

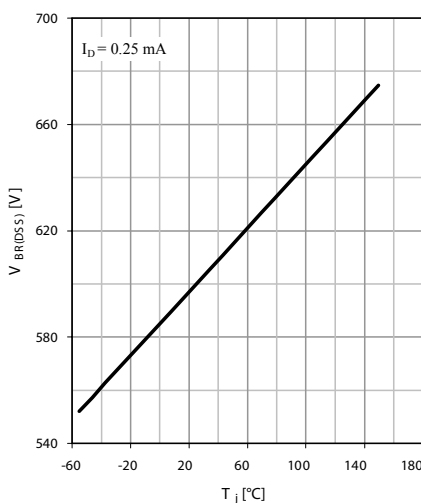


Fig. 11 Drain-source breakdown voltage

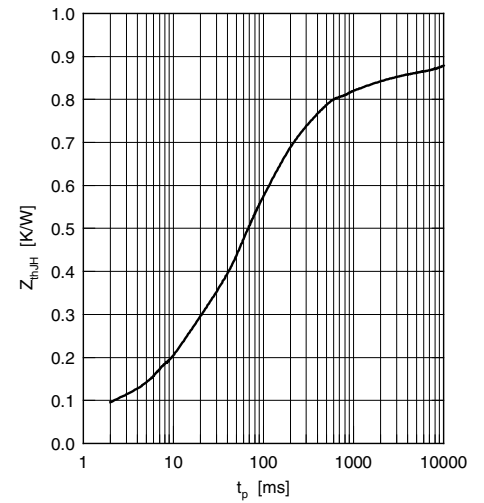


Fig. 12 Typ. transient thermal impedance with heat transfer paste



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