

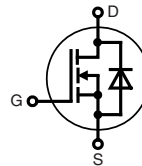
# COOLMOS® \* Power MOSFET

N-Channel Enhancement Mode  
 Low  $R_{DS(on)}$ , High  $V_{DSS}$  MOSFET  
 Ultra low gate charge

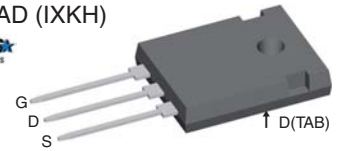
$$I_{D25} = 24 \text{ A}$$

$$V_{DSS} = 600 \text{ V}$$

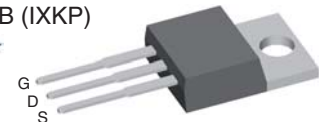
$$R_{DS(on) \text{ max}} = 0.165 \Omega$$



TO-247 AD (IXKH)



TO-220 AB (IXKP)



MOSFET			
Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C}$	600	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	24	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	16	A
$E_{AS}$ $E_{AR}$	single pulse repetitive } $I_D = 7.9 \text{ A}; T_C = 25^{\circ}\text{C}$	522 0.79	mJ mJ
$dV/dt$	MOSFET $dV/dt$ ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

## Features

- fast COOLMOS® \* 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

\*COOLMOS® is a trademark of Infineon Technologies AG.

Symbol	Conditions	Characteristic Values			
		(T <sub>VJ</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 12 \text{ A}$		150	165	mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 0.9 \text{ mA}$	2.5	3	3.5	V
$I_{DSS}$	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			1	$\mu\text{A}$ $\mu\text{A}$
			tbd		
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
$C_{iss}$ $C_{oss}$	} $V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ } $f = 1 \text{ MHz}$		2000 100		pF pF
$Q_g$ $Q_{gs}$ $Q_{gd}$	} $V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 12 \text{ A}$		40 9 13	45	nC nC nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	} $V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ } $I_D = 12 \text{ A}; R_G = 3.3 \Omega$		tbd tbd tbd tbd		ns ns ns ns
$R_{thJC}$				0.5	K/W

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**Source-Drain Diode**

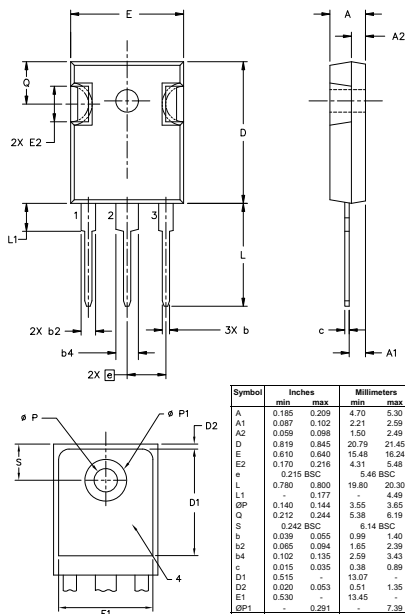
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			12	A
$V_{SD}$	$I_F = 12\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	} $I_F = 12\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		390		ns
$Q_{RM}$			7.5		$\mu\text{C}$
$I_{RM}$			38		A

**Component**

Symbol	Conditions	Maximum Ratings		
$T_{VJ}$	operating		-40...+150	$^{\circ}\text{C}$
$T_{stg}$			-40...+150	$^{\circ}\text{C}$
$M_d$	mounting torque	TO-247	0.8 ... 1.2	Nm
		TO-220	0.4 ... 0.6	Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{thCH}$	with heatsink compound	TO-247	0.25	K/W
		TO-220	0.50	K/W
Weight	TO-247		6	g
	TO-220		2	g

#### TO-247 AD Outline



#### TO-220 AB Outline

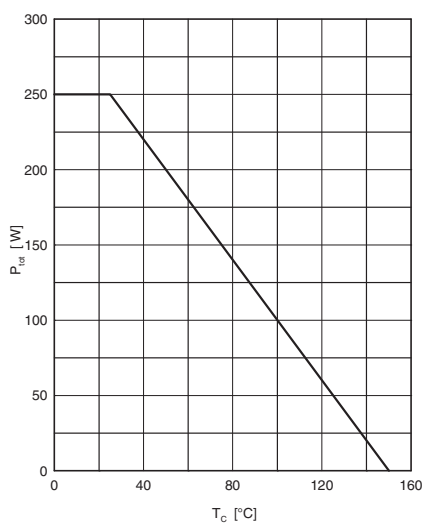
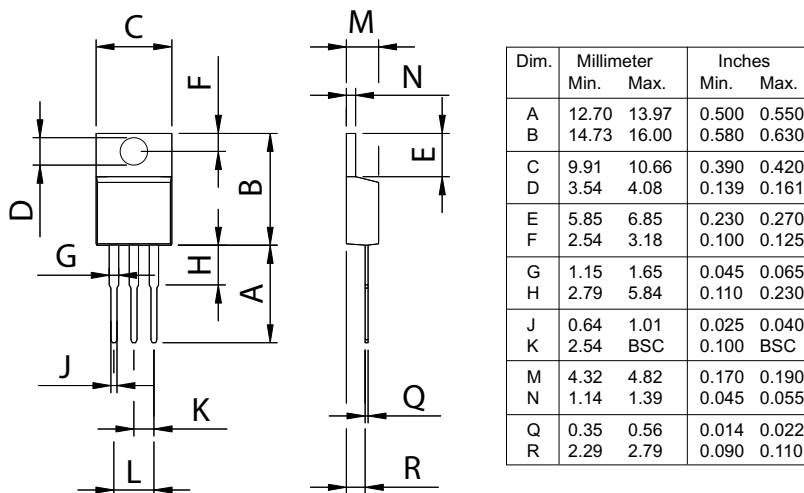


Fig. 1 Power dissipation

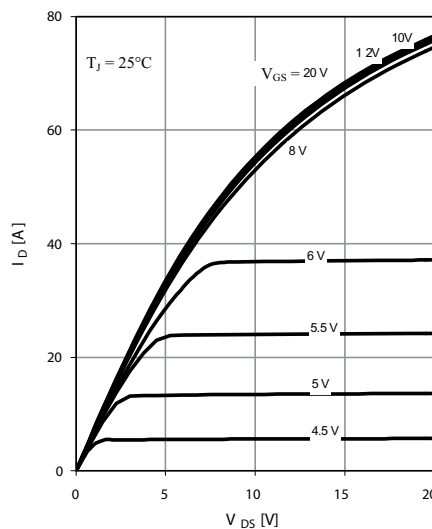


Fig. 2 Typ. output characteristics

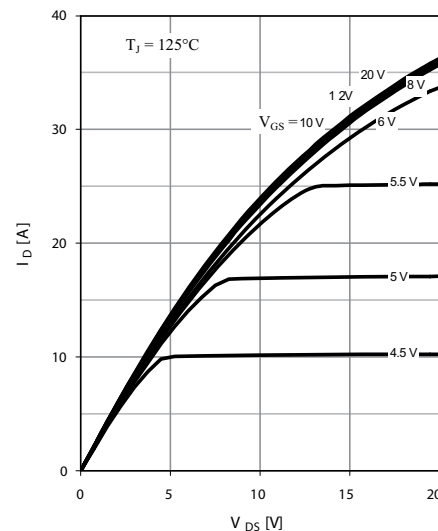


Fig. 3 Typ. output characteristics

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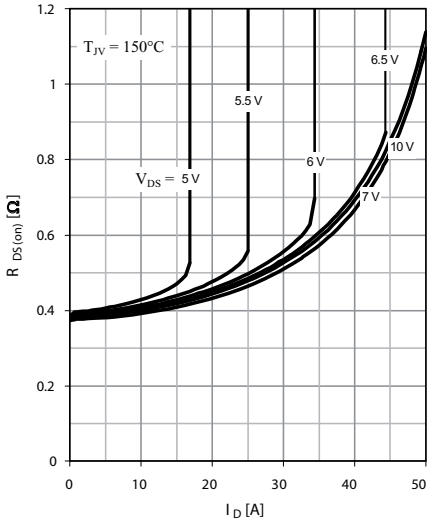


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

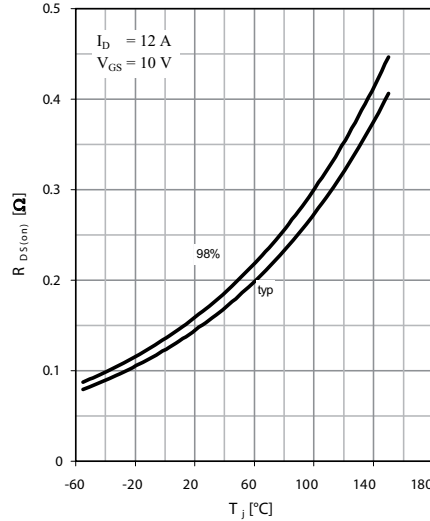


Fig. 5 Drain-source on-state resistance

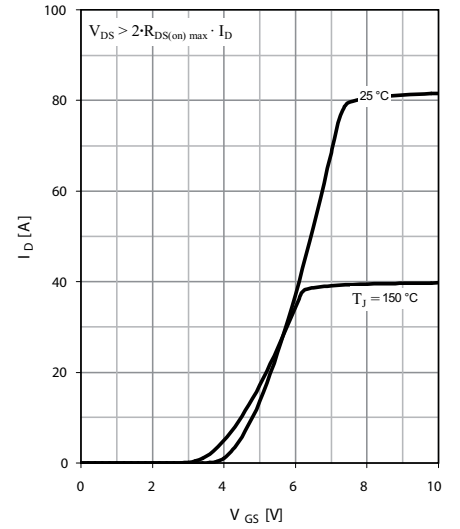


Fig. 6 Typ. transfer characteristics

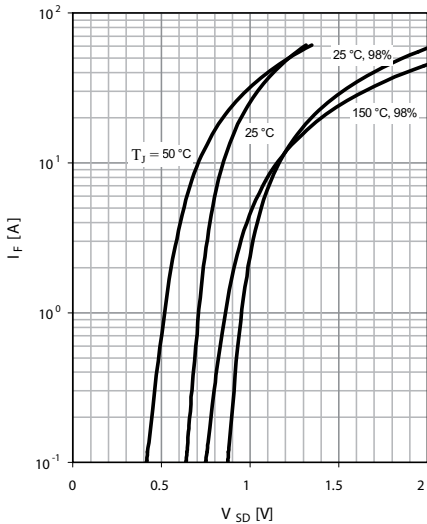


Fig. 7 Forward characteristic of reverse diode

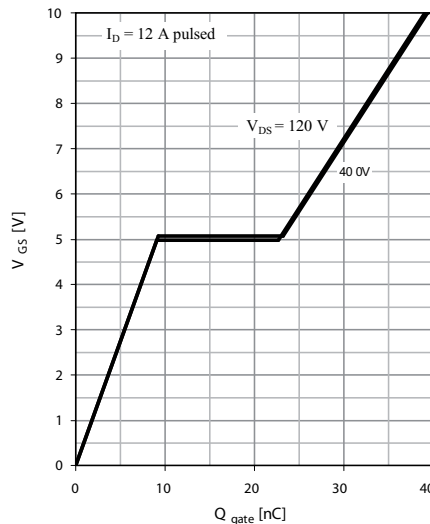


Fig. 8 Typ. gate charge

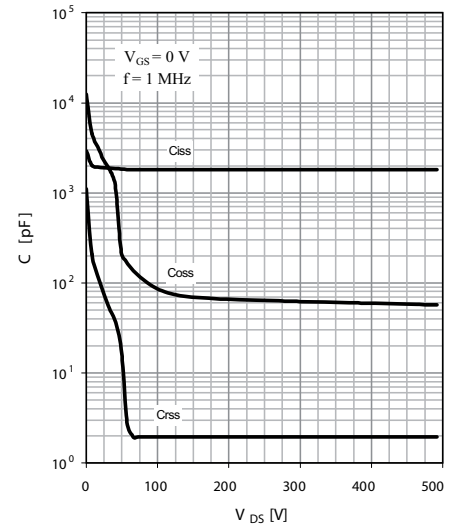


Fig. 9 Typ. capacitances

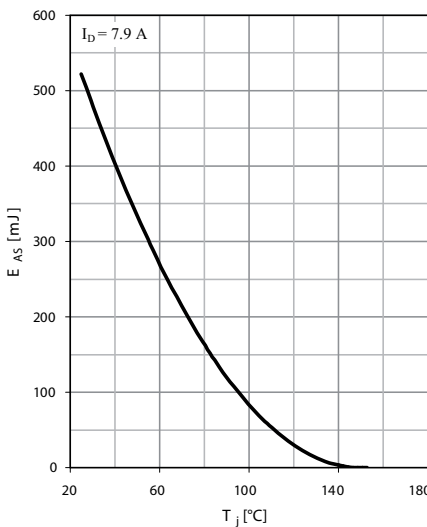


Fig. 10 Avalanche energy

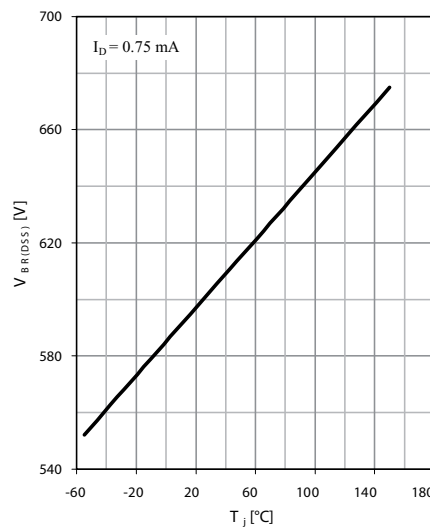


Fig. 11 Drain-source breakdown voltage

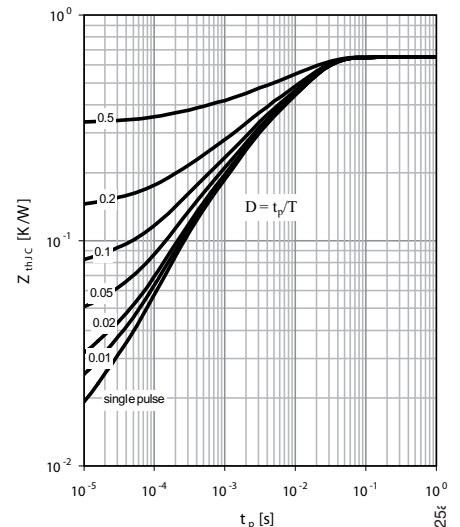


Fig. 12 Max. transient thermal impedance

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