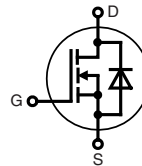


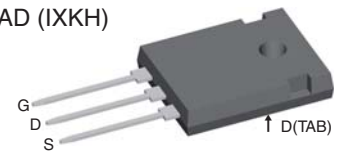
# CoolMOS™ 1) Power MOSFET

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

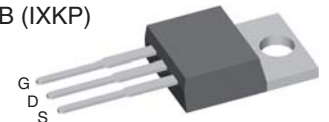
$I_{D25}$  = 20 A  
 $V_{DSS}$  = 600 V  
 $R_{DS(on)max}$  = 0.2  $\Omega$



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
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	20	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	13	A
$E_{AS}$ $E_{AR}$	single pulse repetitive } $I_D = 6.6 \text{ A}; T_C = 25^{\circ}\text{C}$	435 0.66	mJ mJ
$dV/dt$	MOSFET $dV/dt$ ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

## Features

- 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

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^{\circ}\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 10 \text{ A}$		180	200	m $\Omega$
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 1.1 \text{ mA}$	2.5	3	3.5	V
$I_{DSS}$	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			1	$\mu\text{A}$
			10		$\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
$C_{iss}$ $C_{oss}$	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		1520 72		pF pF
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 10 \text{ A}$		32 8 11	45	nC nC nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 10 \text{ A}; R_G = 3.3 \Omega$		10 5 50 5		ns ns ns ns
$R_{thJC}$				0.60	K/W

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

**Source-Drain Diode**

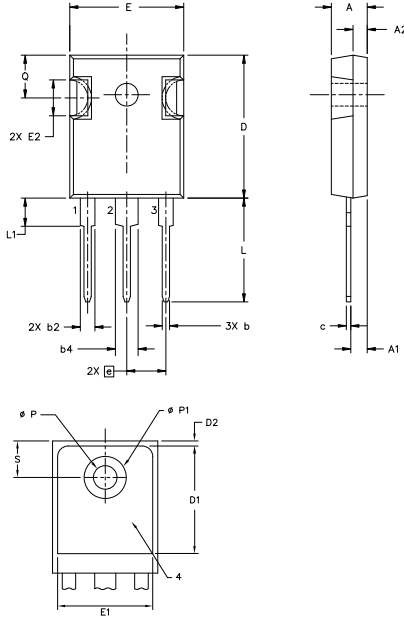
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			10	A
$V_{SD}$	$I_F = 10\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	} $I_F = 10\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		340		ns
$Q_{RM}$			5.5		$\mu\text{C}$
$I_{RM}$			33		A

**Component**

Symbol	Conditions	Maximum Ratings		
$T_{VJ}$	operating		-55...+150	$^{\circ}\text{C}$
$T_{stg}$			-55...+150	$^{\circ}\text{C}$
$M_d$	mounting torque	TO-247	0.8 ... 1.2	Nm
		TO-220	0.4 ... 0.6	Nm

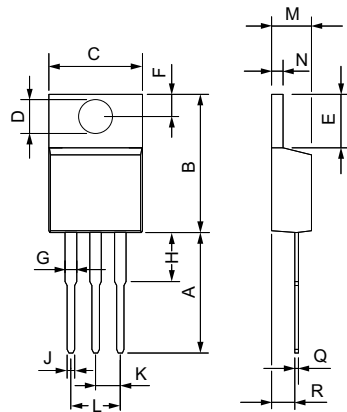
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
$R_{thCH}$	with heatsink compound	TO-247	0.25		K/W
		TO-220	0.50		K/W
Weight	TO-247		6		g
	TO-220		2		g

### TO-247 AD Outline



Symbol	Inches		Millimeters	
	min	max	min	max
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
ØP	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
ØP1	-	0.291	-	7.39

### TO-220 AB Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

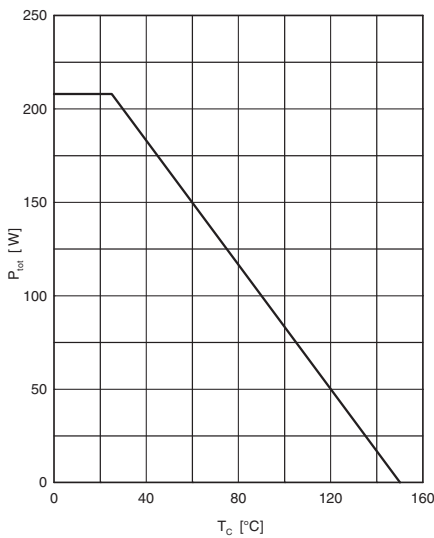


Fig. 1 Power dissipation

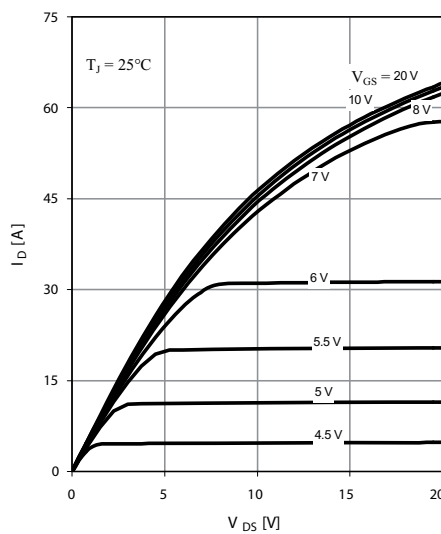


Fig. 2 Typ. output characteristics

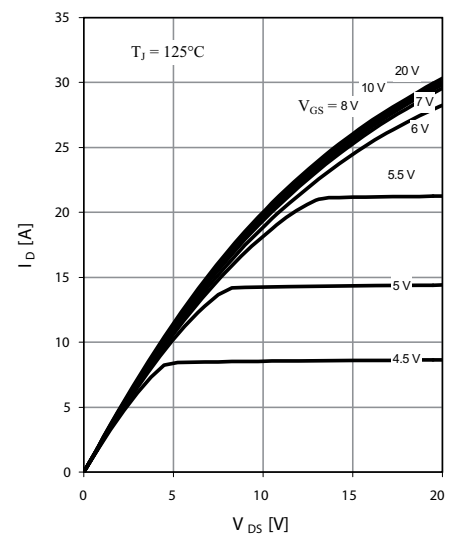


Fig. 3 Typ. output characteristics

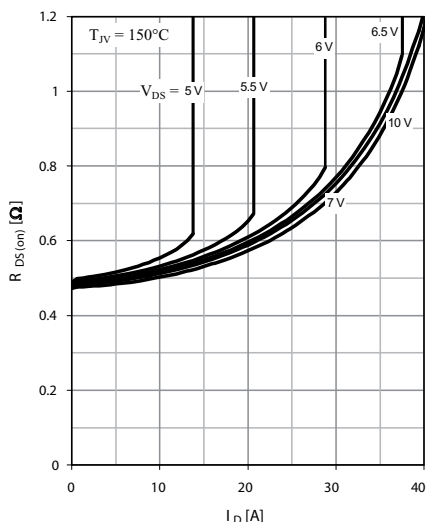


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

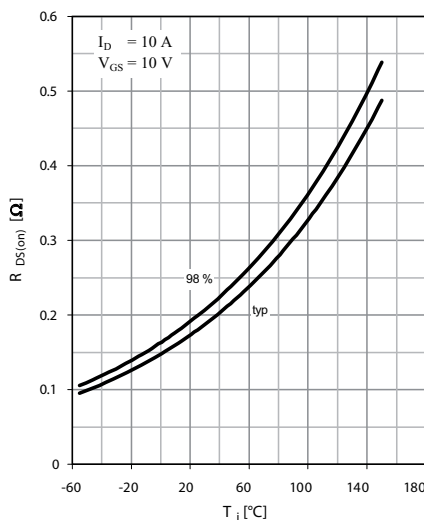


Fig. 5 Drain-source on-state resistance

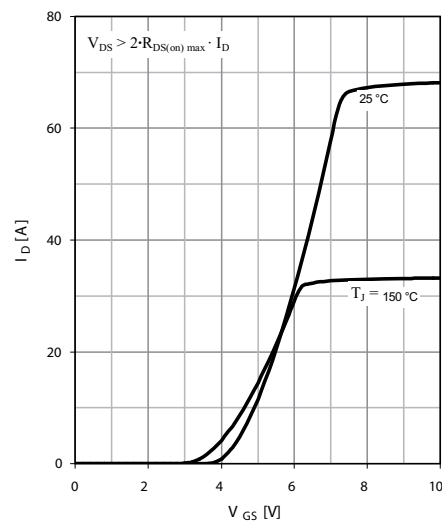


Fig. 6 Typ. transfer characteristics

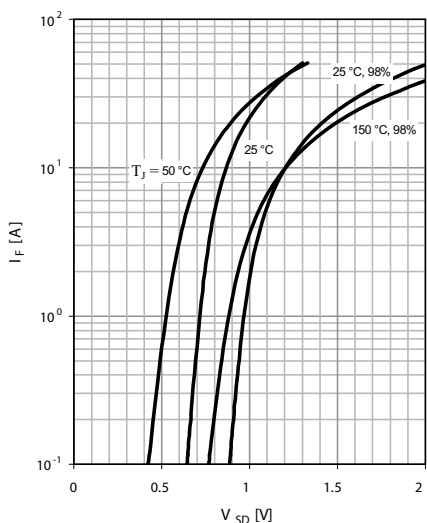


Fig. 7 Forward characteristic of reverse diode

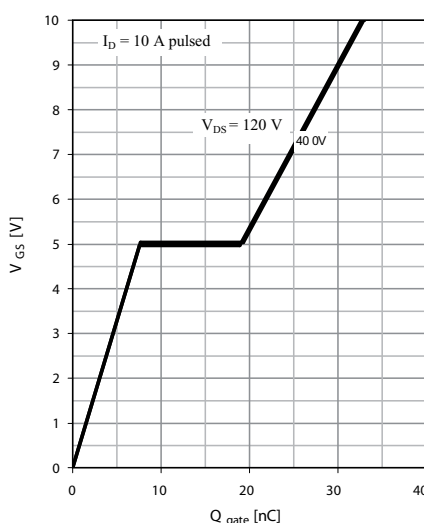


Fig. 8 Typ. gate charge

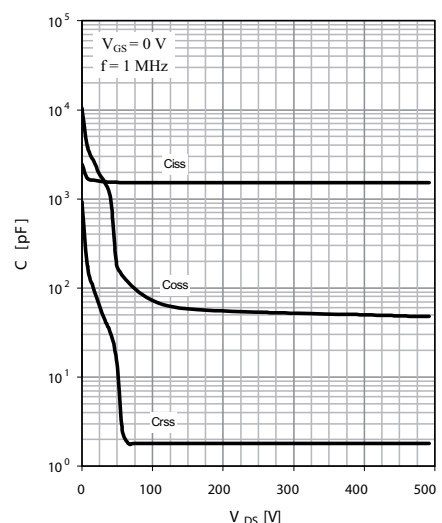


Fig. 9 Typ. capacitances

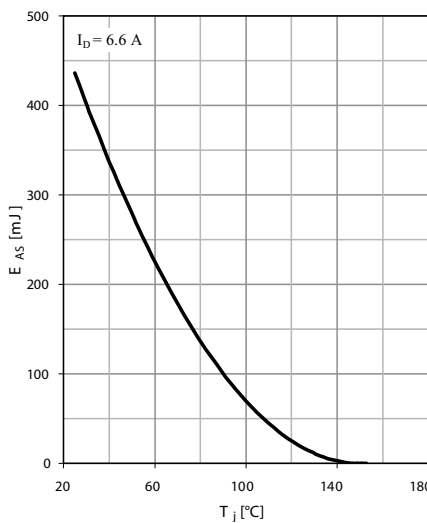


Fig. 10 Avalanche energy

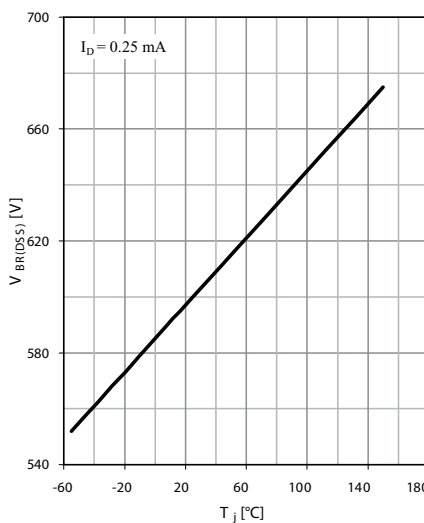


Fig. 11 Drain-source breakdown voltage

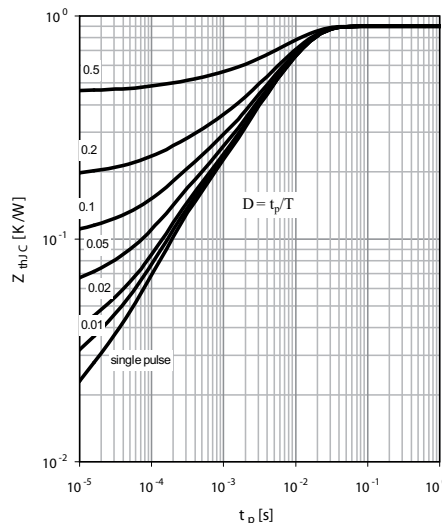


Fig. 12 Max. transient thermal impedance

IXYS reserves the right to change limits, test conditions and dimensions.

20080523d



---

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).