

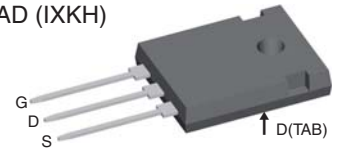
CoolMOS™ 1) Power MOSFET

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

$I_{D25} = 70\text{ A}$
 $V_{DSS} = 600\text{ V}$
 $R_{DS(on) \text{ max}} = 0.045\ \Omega$



TO-247 AD (IXKH)



MOSFET			
Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	70	A
I_{D90}	$T_C = 90^\circ\text{C}$	48	A
E_{AS} E_{AR}	single pulse repetitive } $I_D = 11\text{ A}; T_C = 25^\circ\text{C}$	1950 3	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

¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG.

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10\text{ V}; I_D = 44\text{ A}$		40	45	m Ω
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 3\text{ mA}$	2.5	3	3.5	V
I_{DSS}	$V_{DS} = 600\text{ V}; V_{GS} = 0\text{ V}$			10	μA μA
			tbd		
I_{GSS}	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			100	nA
C_{iss} C_{oss}	} $V_{GS} = 0\text{ V}; V_{DS} = 100\text{ V}$ } $f = 1\text{ MHz}$		6800 320		pF pF
Q_g Q_{gs} Q_{gd}	} $V_{GS} = 0\text{ to }10\text{ V}; V_{DS} = 400\text{ V}; I_D = 44\text{ A}$		150 35 50	190	ns ns ns
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	} $V_{GS} = 10\text{ V}; V_{DS} = 400\text{ V}$ } $I_D = 44\text{ A}; R_G = 3.3\ \Omega$		30 20 100 10		ns ns ns ns
R_{thJC}				0.2	K/W

Source-Drain Diode

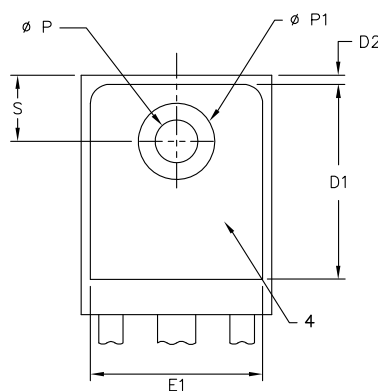
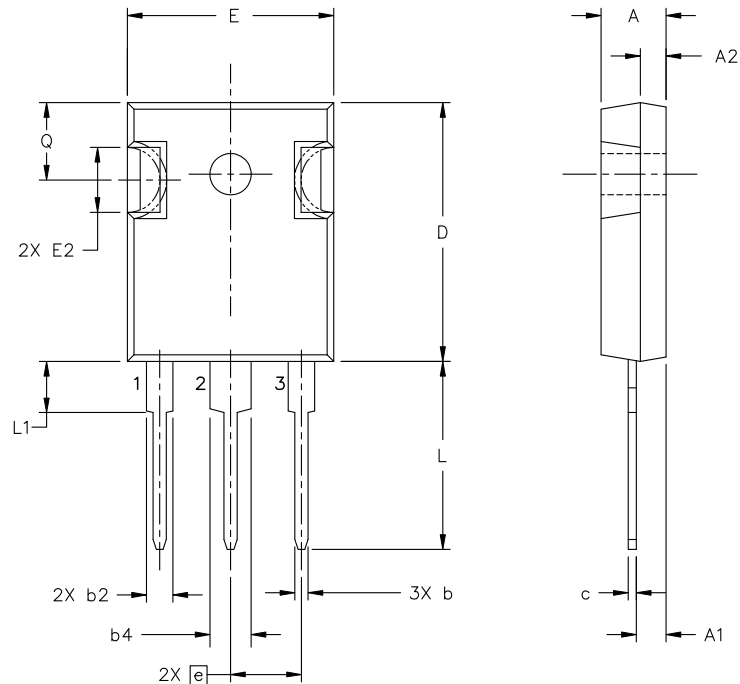
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)				
I_S	$V_{GS} = 0\text{ V}$		44	A
V_{SD}	$I_F = 44\text{ A}; V_{GS} = 0\text{ V}$	0.9	1.2	V
t_{rr}	} $I_F = 44\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$	600		ns
Q_{RM}		17		μC
I_{RM}		60		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	0.8 ... 1.2	Nm

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R_{thCH}	with heatsink compound	0.25		K/W
Weight		6		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

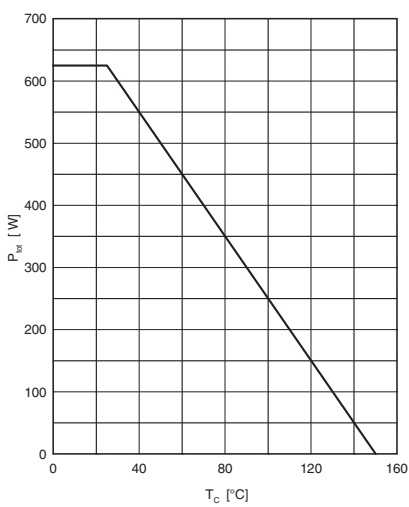


Fig. 1 Power dissipation

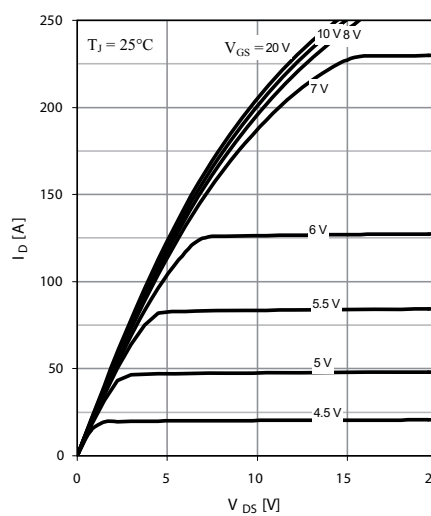


Fig. 2 Typ. output characteristics

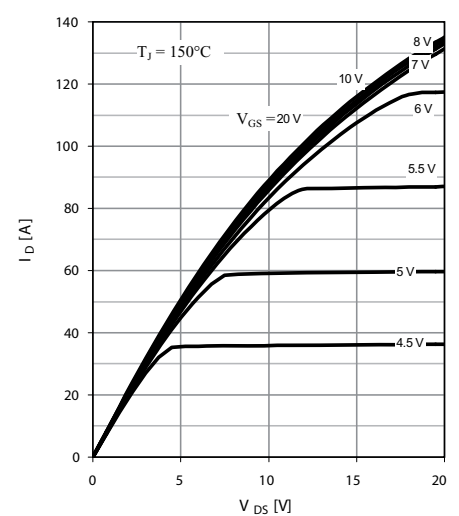


Fig. 3 Typ. output characteristics

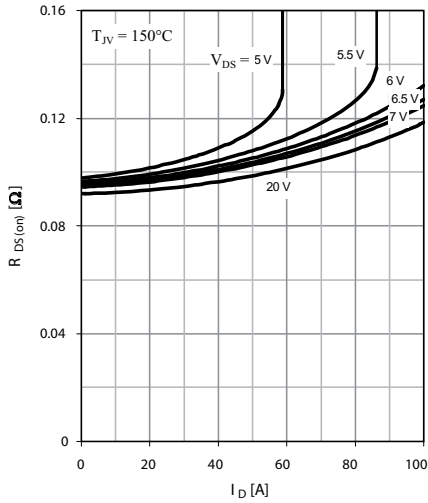


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

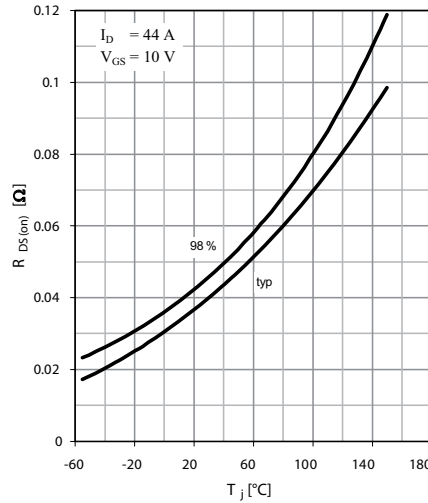


Fig. 5 Drain-source on-state resistance

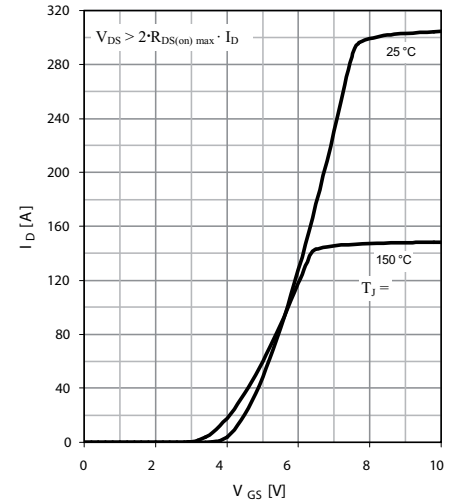


Fig. 6 Typ. transfer characteristics

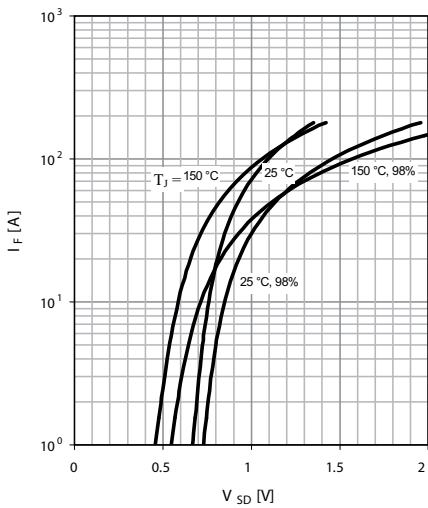


Fig. 7 Forward characteristic of reverse diode

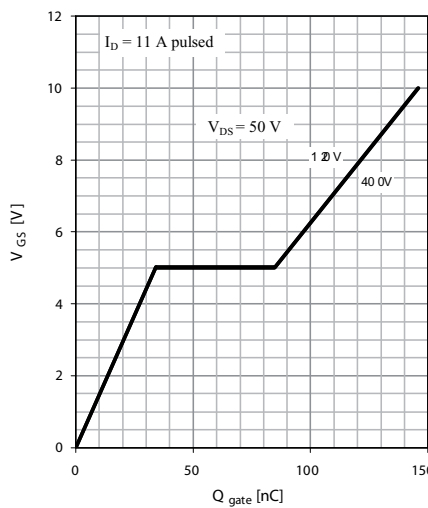


Fig. 8 Typ. gate charge

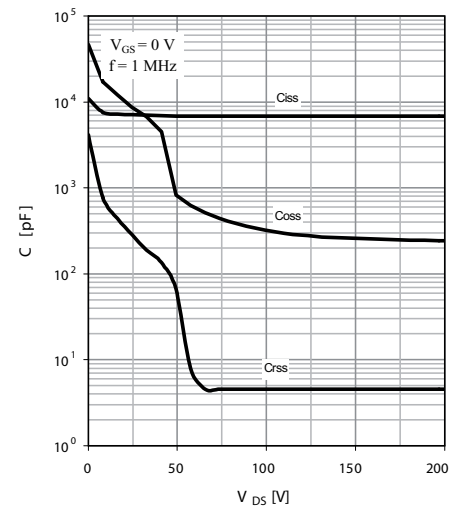


Fig. 9 Typ. capacitances

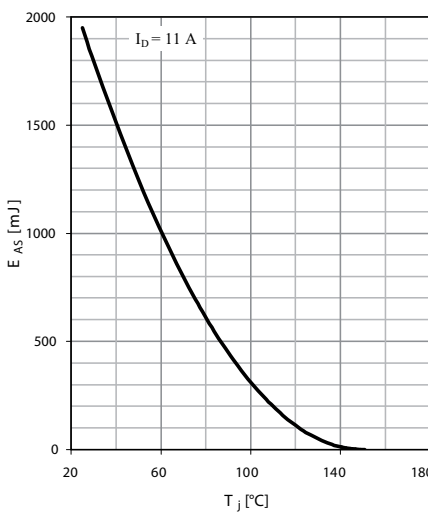


Fig. 10 Avalanche energy

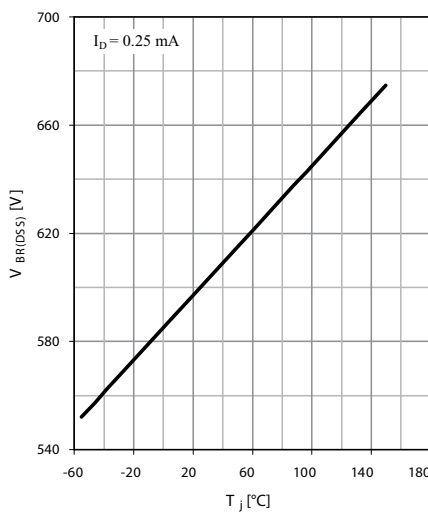


Fig. 11 Drain-source breakdown voltage

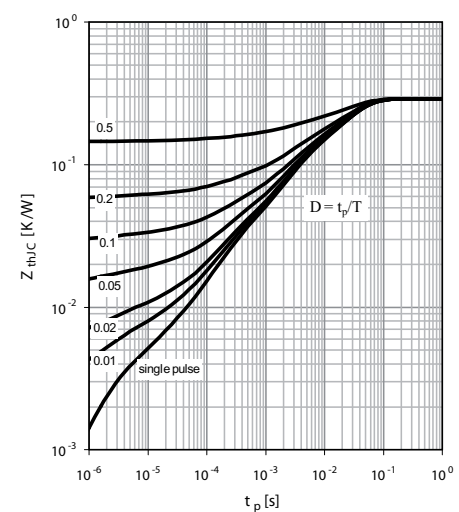


Fig. 12 Max. transient thermal impedance

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

20080310b