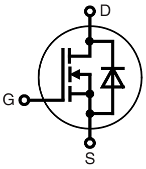
Advanced Technical Information

IXKH 35N60C5
IXKP 35N60C5

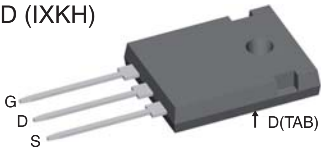
CoolMOS™ [1] Power MOSFET

I_{D25} = 35 A
V_{DSS} = 600 V
$R_{DS(on)\ max}$ = 0.1 Ω

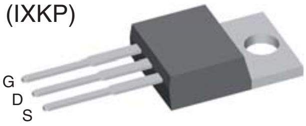
N-Channel Enhancement Mode
Low R_{DSon}, High V_{DSS} MOSFET
Ultra low gate charge



TO-247 AD (IXKH)



TO-220 AB (IXKP)



MOSFET			
Symbol	**Conditions**	**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C	600	V
V_{GS}		± 20	V
I_{D25}	T_C = 25°C	35	A
I_{D90}	T_C = 90°C	25	A
E_{AS}	single pulse } I_D = 11 A; T_C = 25°C	800	mJ
E_{AR}	repetitive	1.2	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	2.1	3	3.9	V
I_{DSS}	V_{DS} = 600 V; V_{GS} = 0 V T_{VJ} = 25°C			10	µA
	T_{VJ} = 125°C		tbd		µA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V			100	nA
C_{iss}	V_{GS} = 0 V; V_{DS} = 100 V		2800		pF
C_{oss}	f = 1 MHz		130		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 18 A		60	70	ns
Q_{gs}			14		ns
Q_{gd}			20		ns
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 400 V		10		ns
t_r	I_D = 18 A; R_G = 3.3 Ω		5		ns
$t_{d(off)}$			tbd		ns
t_f			5		ns
R_{thJC}				0.35	K/W

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.

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Source-Drain Diode

Characteristic Values (T_{VJ} = 25°C, unless otherwise specified)

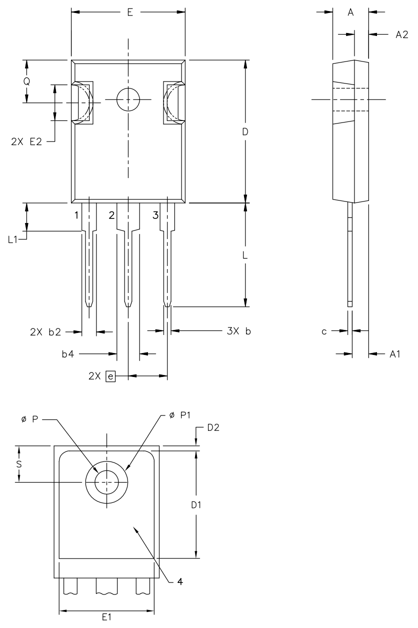
Symbol	Conditions	min.	typ.	max.	
I_S	V_{GS} = 0 V			18	A
V_{SD}	I_F = 18 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr} Q_{RM} I_{RM}	I_F = 18 A; -di_F/dt = 100 A/µs; V_R = 400 V		450 12 70		ns µC A

Component

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

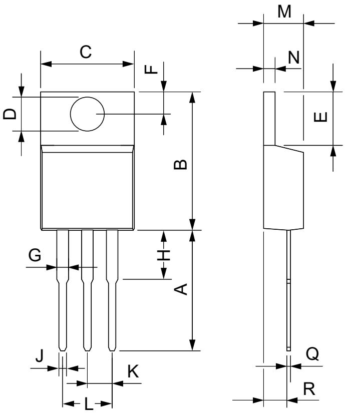
Symbol	Conditions		Characteristic Values min.	typ.	max.	
R_{thCH}	with heatsink compound	TO-247 TO-220		0.25 0.50		K/W K/W
Weight	TO-247 TO-220			6 2		g g

TO-247 AD Outline



Symbol	Inches min	Inches max	Millimeters min	Millimeters 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 Min.	Millimeter Max.	Inches Min.	Inches 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

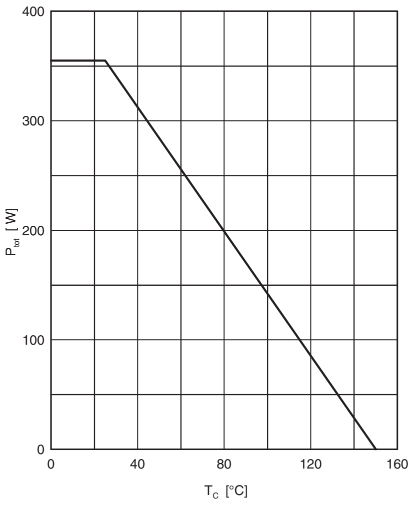


Fig. 1 Power dissipation

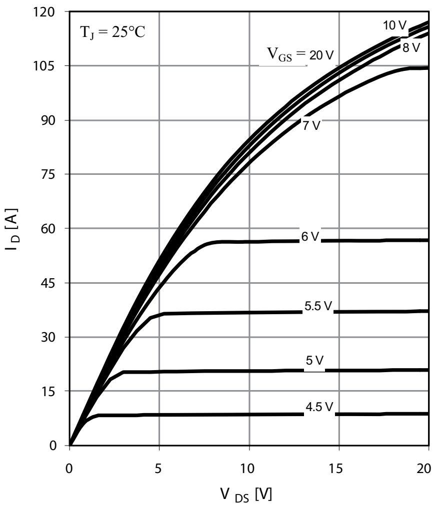


Fig. 2 Typ. output characteristics

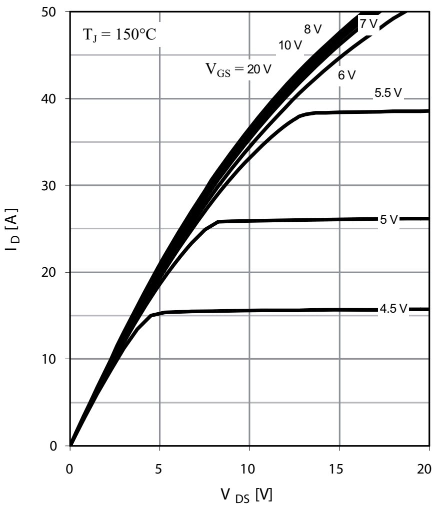


Fig. 3 Typ. output characteristics

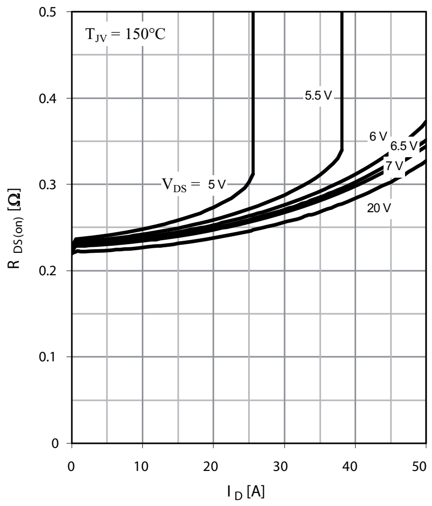


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

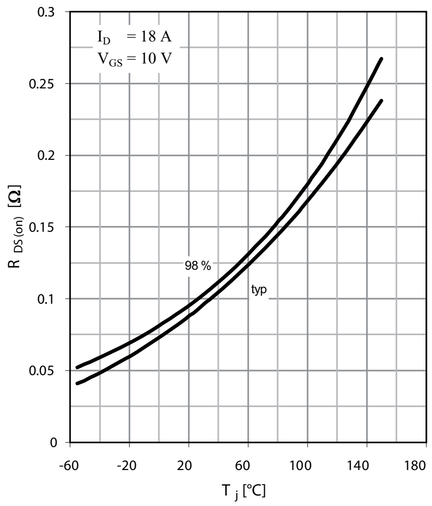


Fig. 5 Drain-source on-state resistance

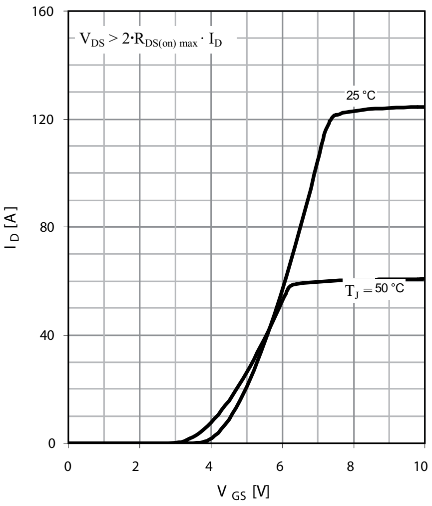


Fig. 6 Typ. transfer characteristics

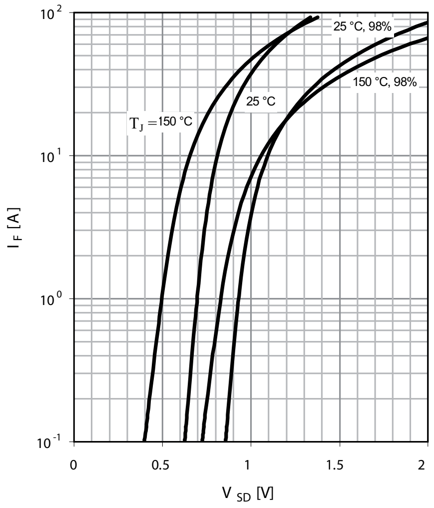


Fig. 7 Forward characteristic of reverse diode

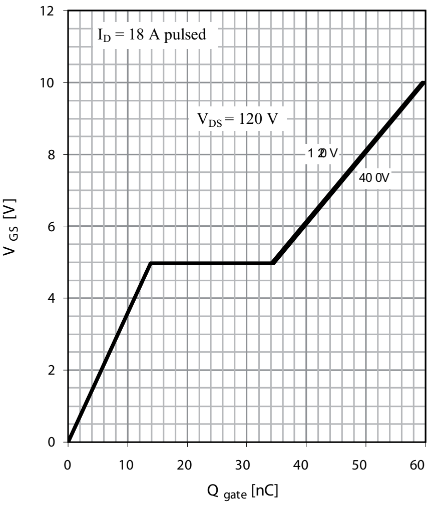


Fig. 8 Typ. gate charge

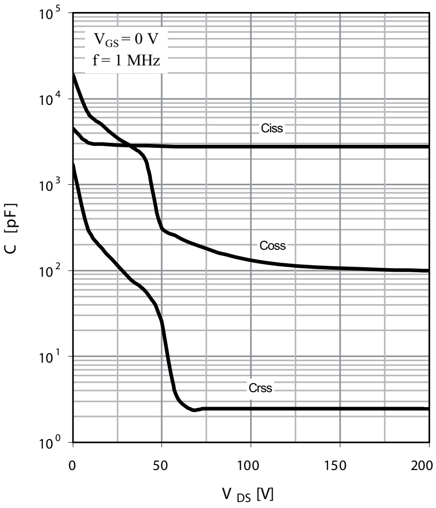


Fig. 9 Typ. capacitances

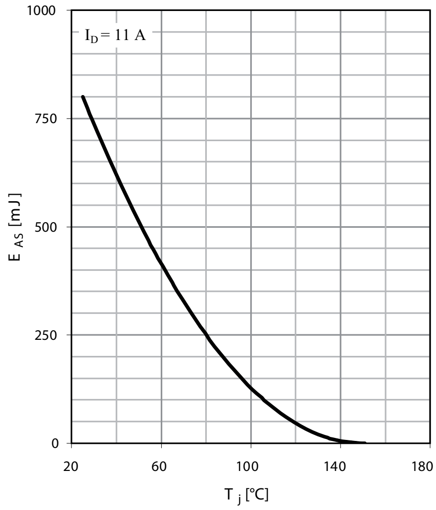


Fig. 10 Avalanche energy

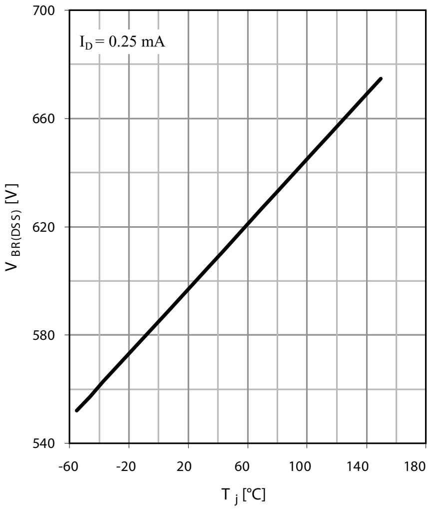


Fig. 11 Drain-source breakdown voltage

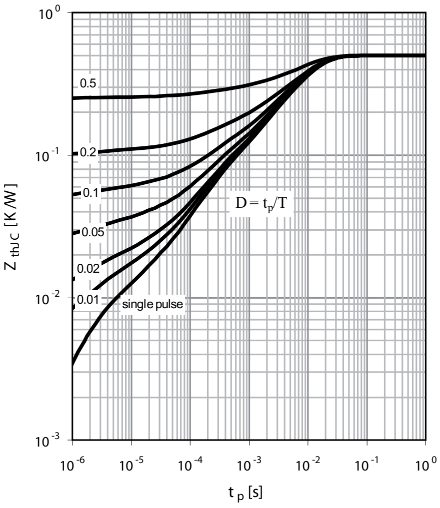


Fig. 12 Max. transient thermal impedance