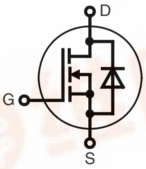
IXYS Advanced Technical Information **IXKP 10N60C5M**

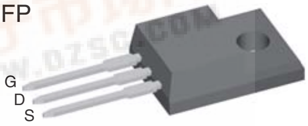
CoolMOS Power MOSFET

I_{D25} = 5.4 A
V_{DSS} = 600 V
$R_{DS(on)\,max}$ = 0.385 Ω

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



TO-220 ABFP



Symbol	Conditions	Maximum Ratings	
MOSFET			
V_{DSS}	T_{VJ} = 25°C	600	V
V_{GS}		± 20	V
I_{D25} I_{D90}	T_C = 25°C T_C = 90°C	5.4 3.7	A A
E_{AS} E_{AR}	single pulse repetitive } I_D = 3.4 A; T_C = 25°C	225 0.3	mJ 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 = 5.2 A		350	385	mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 0.34 mA	2.5	3	3.5	V
I_{DSS}	V_{DS} = 600 V; V_{GS} = 0 V T_{VJ} = 25°C			1	µA
	T_{VJ} = 125°C		tbd		µA
I_{GSS}	V_{GS} = ± 20 V; V_{DS} = 0 V			100	nA
C_{iss} C_{oss}	V_{GS} = 0 V; V_{DS} = 100 V f = 1 MHz		790 38		pF pF
Q_g Q_{gs} Q_{gd}	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 5.2 A		17 4 6	22	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	V_{GS} = 10 V; V_{DS} = 400 V I_D = 5.2 A; R_G = 4.3 Ω		tbd tbd tbd tbd		ns ns ns ns
R_{thJC}				3.95	K/W

Features

- Fast CoolMOS power MOSFET - 4th generation
  - High blocking capability
  - Lowest resistance
  - Avalanche rated for unclamped inductive switching (UIS)
- Fully isolated package

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating
- PDP and LCD adapter

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Source-Drain Diode

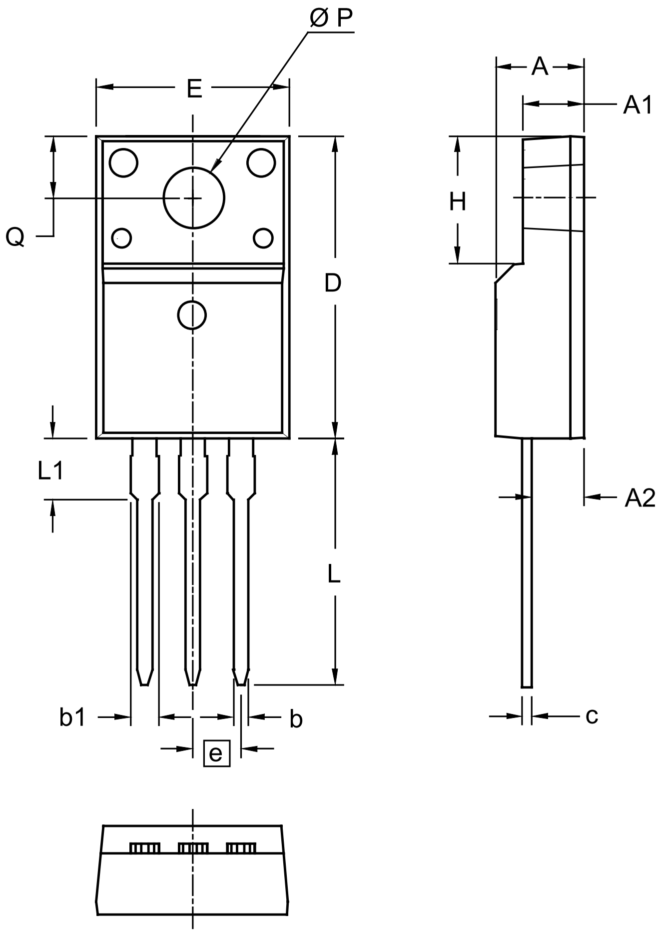
Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	$V_{GS} = 0$ V			5.2	A
V_{SD}	$I_F = 5.2$ A; $V_{GS} = 0$ V		0.9	1.2	V
t_{rr} **Q_{RM}** **I_{RM}**	$I_F = 5.2$ A; $-di_F/dt = 100$ A/µs; $V_R = 400$ V		260 21 24		ns µC A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ} **T_{stg}**	operating	-40...+150 -40...+150	°C °C
M_d	mounting torque	0.4 ... 0.6	Nm

Symbol	Conditions	Characteristic Values min.	typ.	max.	
R_{thCH} **R_{thJA}**	with heatsink compound thermal resistance junction - ambient		0.50 80		K/W K/W
Weight			2		g

TO-220 ABFP Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

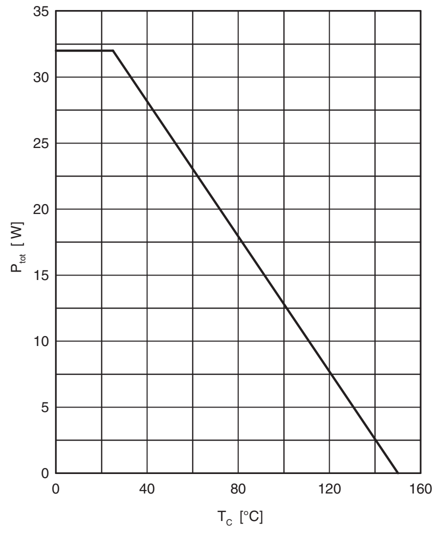


Fig. 1 Power dissipation

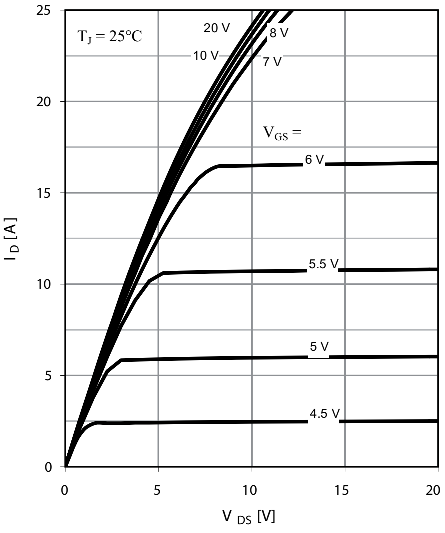


Fig. 2 Typ. output characteristics

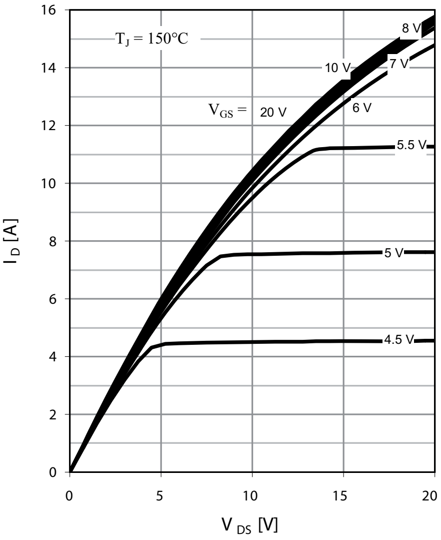


Fig. 3 Typ. output characteristics

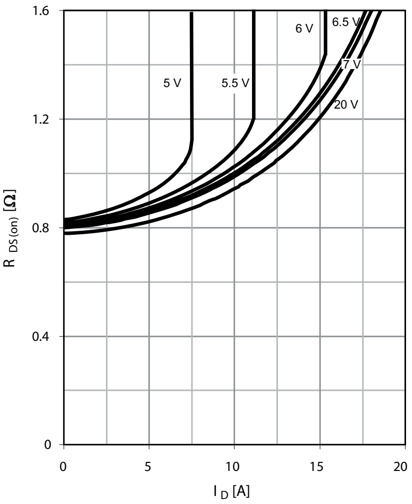


Fig. 3 Typ. drain-source on-state resistance characteristics of IGBT

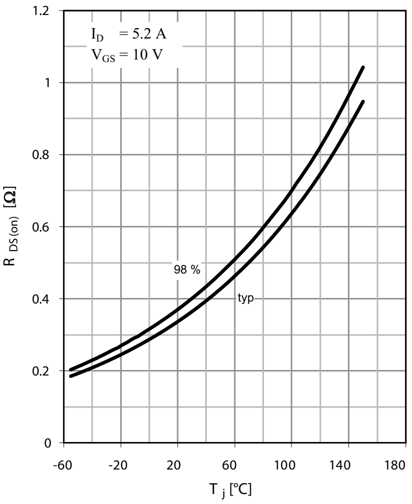


Fig. 4 Drain-source on-state resistance

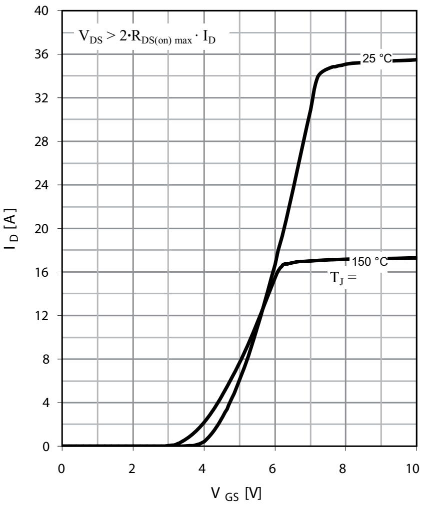


Fig. 5 Typ. transfer characteristics

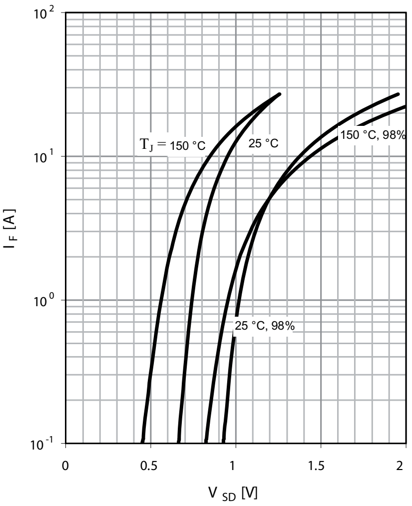


Fig. 6 Forward characteristic of reverse diode

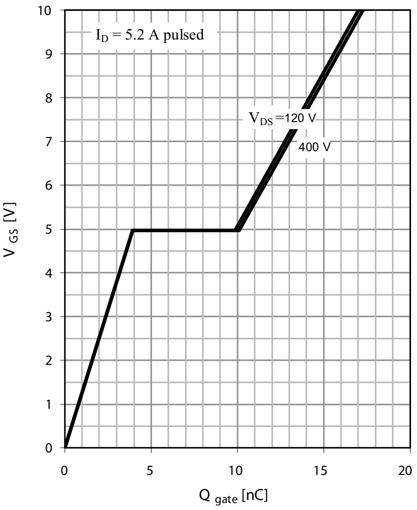


Fig. 7 Typ. gate charge

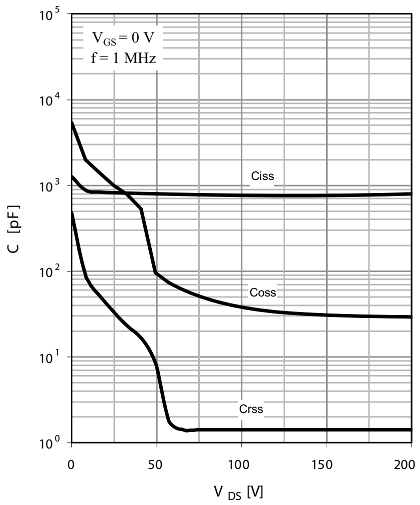


Fig. 8 Typ. capacitances

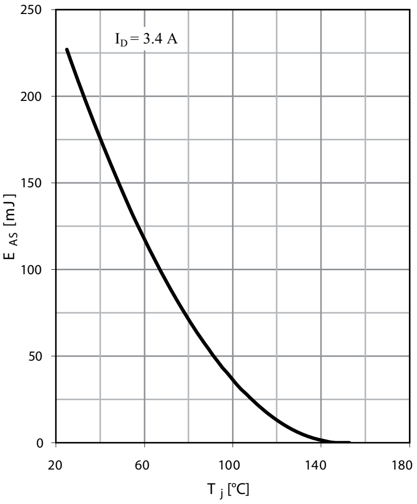


Fig. 9 Avalanche energy

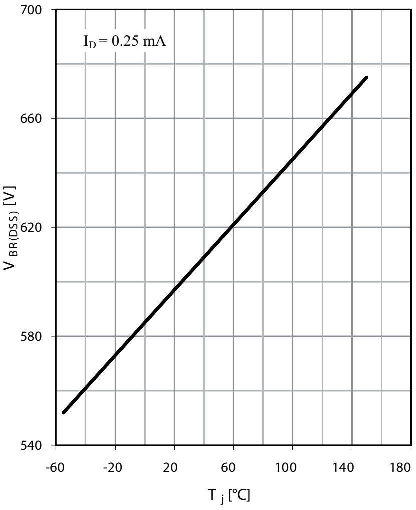


Fig. 10 Drain-source breakdown voltage