

CoolMOS™ 1) Power MOSFET

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

Preliminary data



$$I_{D25} = 6.5 \text{ A}$$

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

$$R_{DS(on) \text{ max}} = 0.3 \Omega$$

TO-220 FP



MOSFET			
Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	6.5	A
I_{D90}	$T_C = 90^\circ\text{C}$	4.5	A
E_{AS} E_{AR}	single pulse repetitive } $I_D = 4.4 \text{ A}; T_C = 25^\circ\text{C}$	290 0.44	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.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 6.6 \text{ A}$		270	300	mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 0.44 \text{ mA}$	2.5	3	3.5	V
I_{DSS}	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			1	μA
			10		μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
C_{iss} C_{oss}	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		1100 60		pF pF
Q_g Q_{gs} Q_{gd}	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 6.6 \text{ A}$		22 5 7.6	30	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 6.6 \text{ A}; R_G = 4.3 \Omega$		10 5 40 5		ns ns ns ns
R_{thJC}				3.85	K/W

Source-Drain Diode

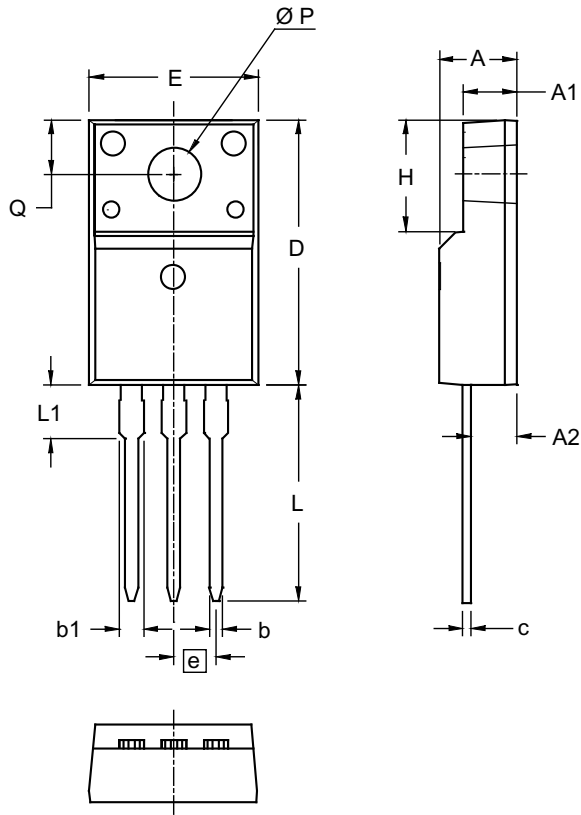
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)					
I_S	$V_{GS} = 0\text{ V}$			6.6	A
V_{SD}	$I_F = 6.6\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
t_{rr}	} $I_F = 6.6\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		300		ns
Q_{RM}			3.9		μC
I_{RM}			26		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	0.4 ... 0.6	Nm

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

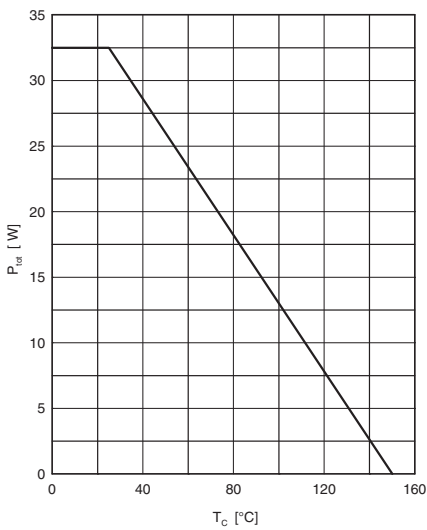


Fig. 1 Power dissipation

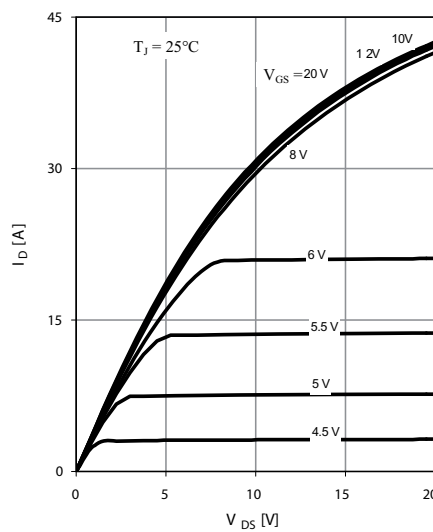


Fig. 2 Typ. output characteristics

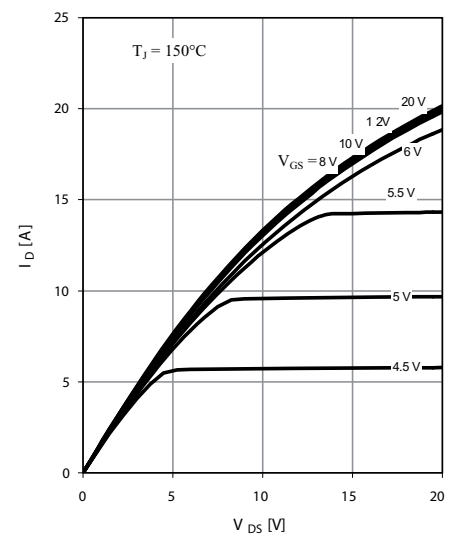


Fig. 3 Typ. output characteristics

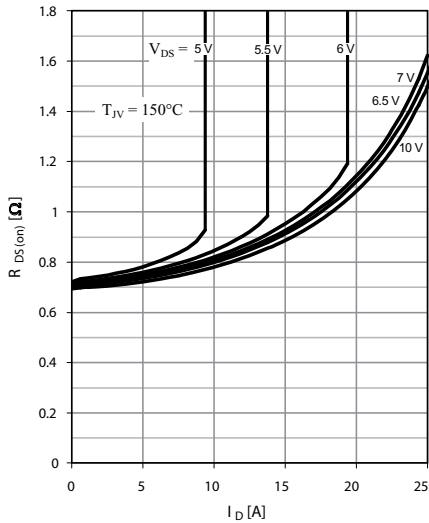


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

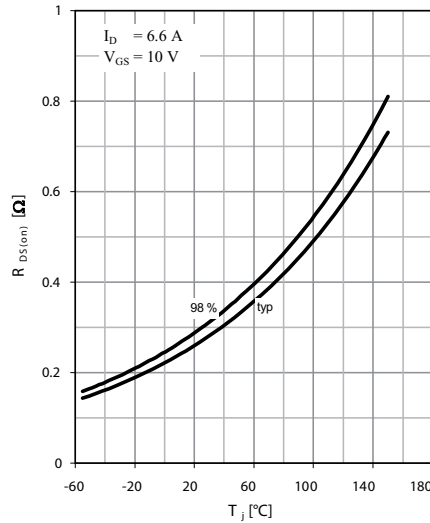


Fig. 5 Drain-source on-state resistance

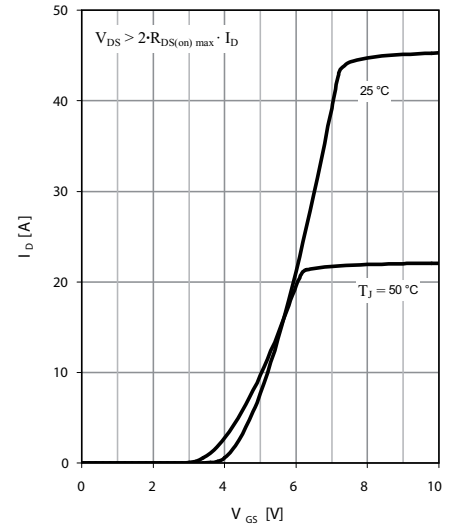


Fig. 6 Typ. transfer characteristics

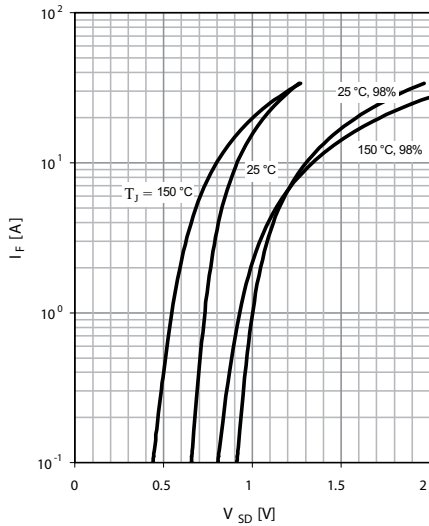


Fig. 7 Forward characteristic of reverse diode

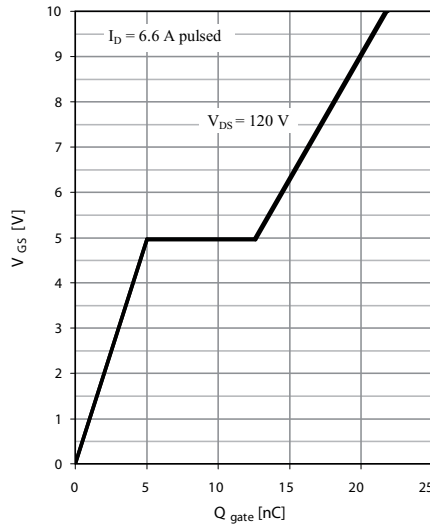


Fig. 8 Typ. gate charge

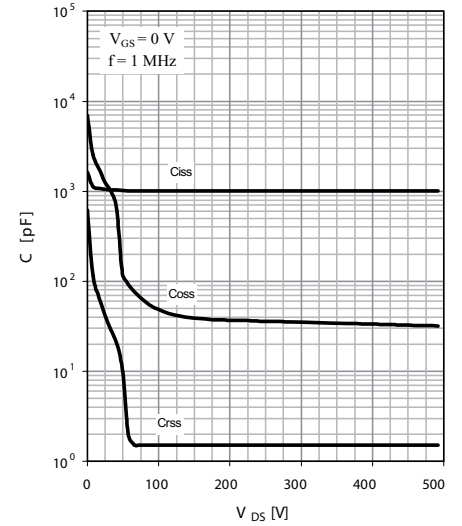


Fig. 9 Typ. capacitances

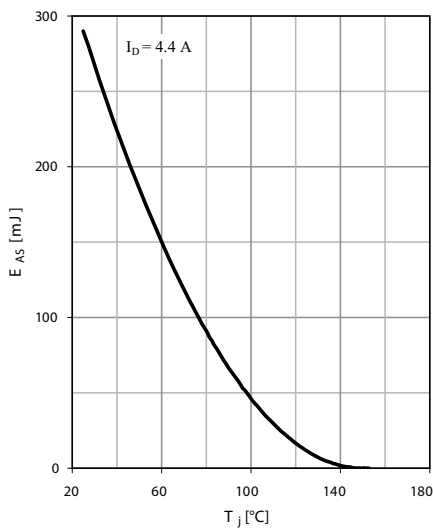


Fig. 10 Avalanche energy

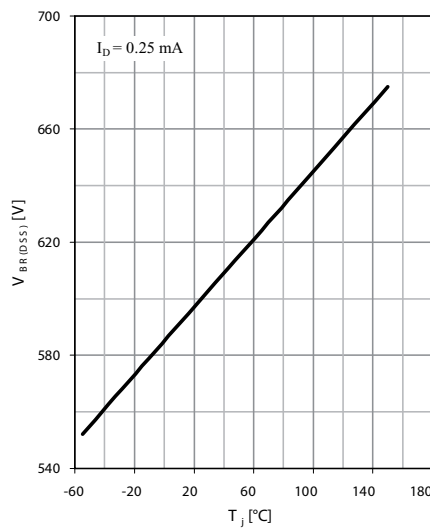


Fig. 11 Drain-source breakdown voltage

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

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