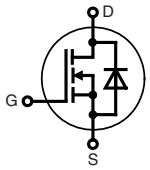
CoolMOS™ [1] Power MOSFET

I_{D25} = 6.5 A
V_{DSS} = 600 V
$R_{DS(on)\ max}$ = 0.3 Ω

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

Preliminary data



TO-220 FP

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

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

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}		-55...+150	°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 juntion - ambient		80		K/W
Weight			2		g

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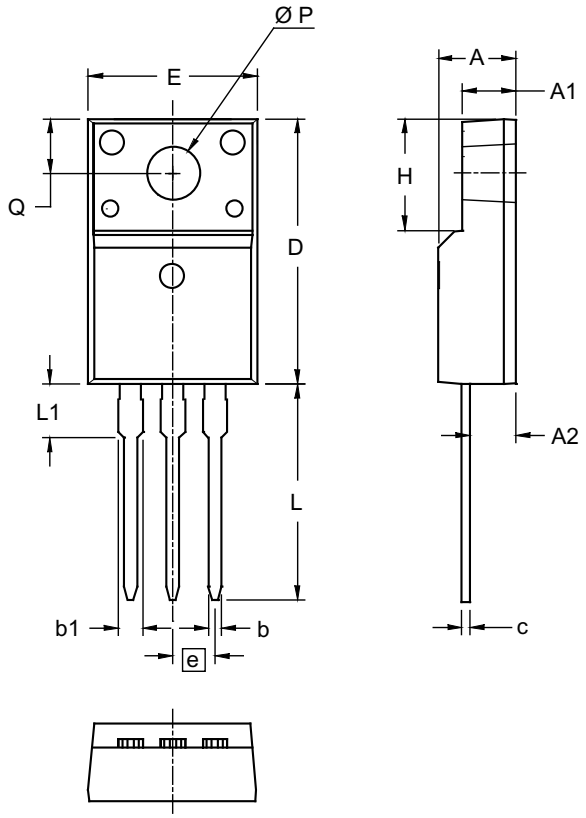
TO-220 ABFP Outline



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

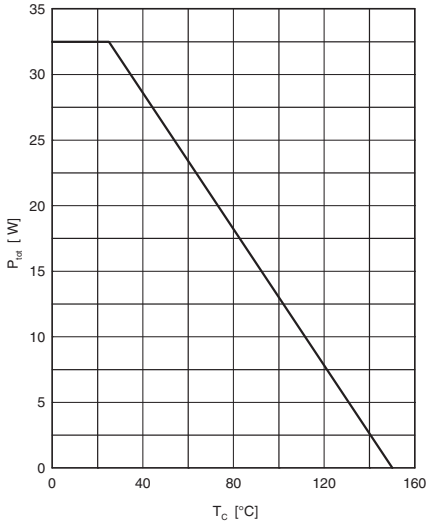


Fig. 1 Power dissipation

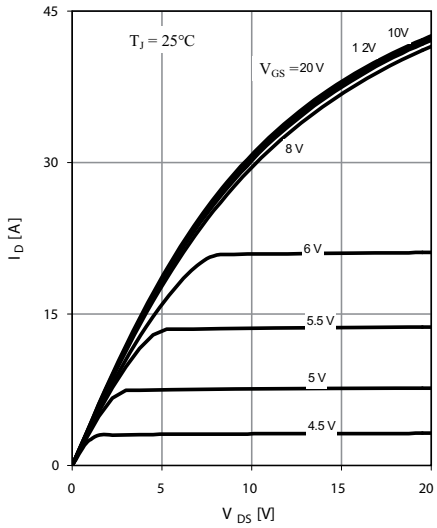


Fig. 2 Typ. output characteristics

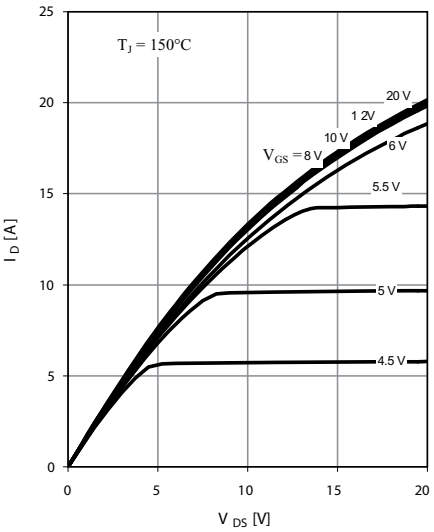


Fig. 3 Typ. output characteristics

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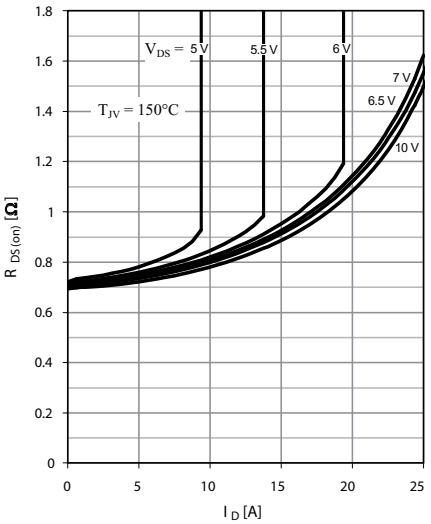

Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

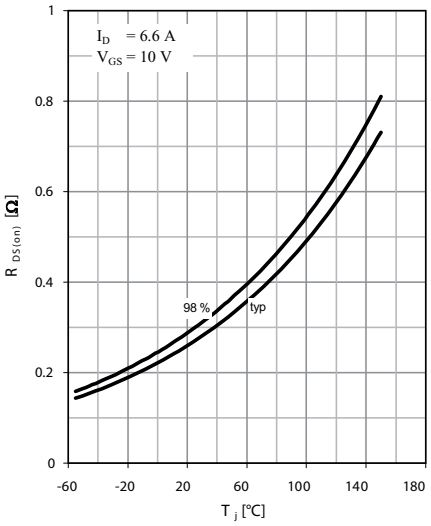

Fig. 5 Drain-source on-state resistance

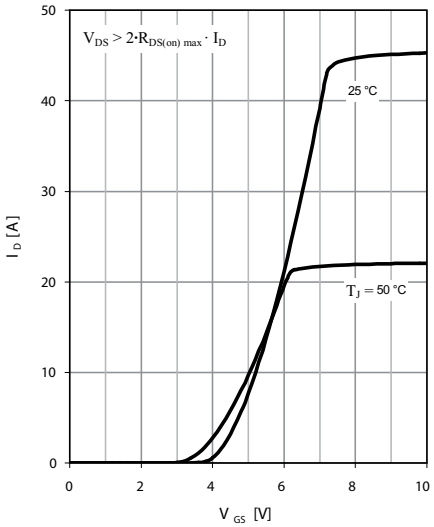

Fig. 6 Typ. transfer characteristics

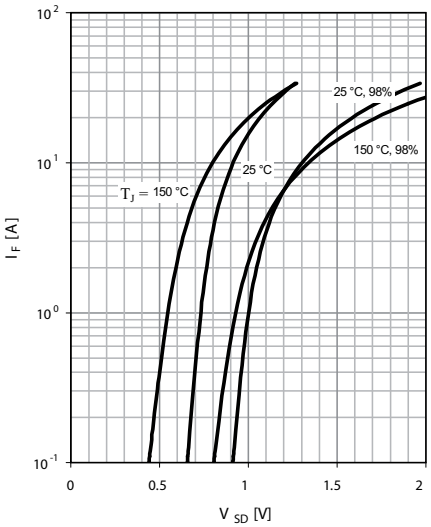

Fig. 7 Forward characteristic of reverse diode

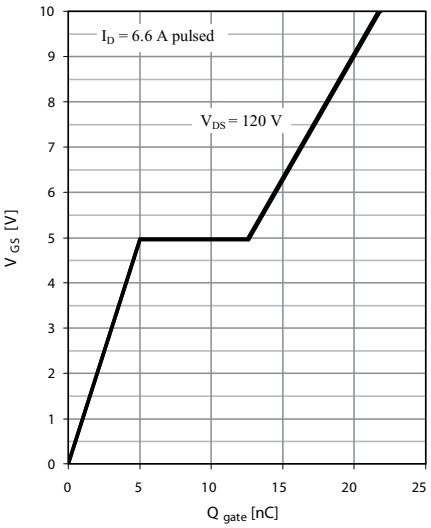

Fig. 8 Typ. gate charge

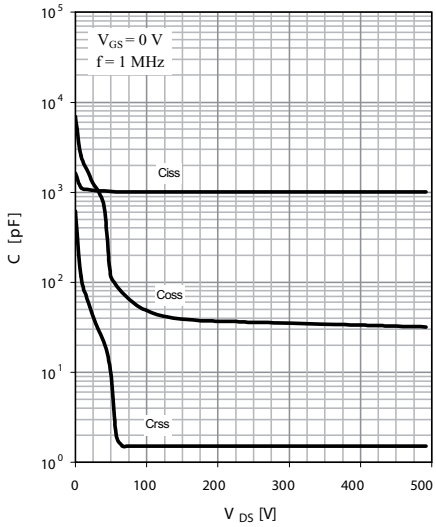

Fig. 9 Typ. capacitances

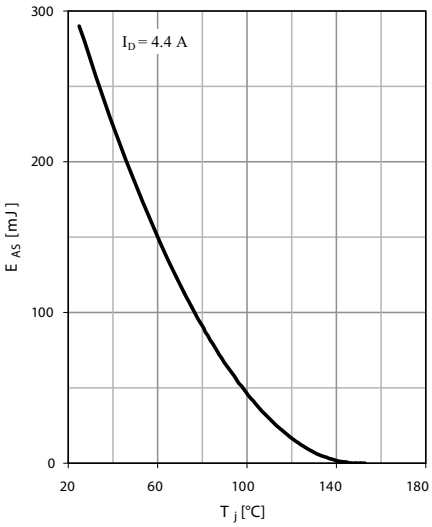

Fig. 10 Avalanche energy

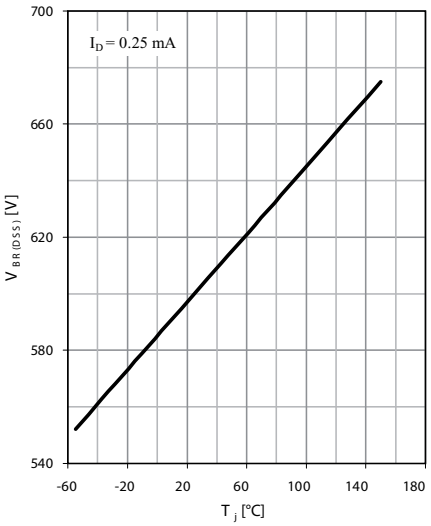

Fig. 11 Drain-source breakdown voltage

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