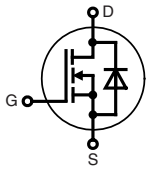
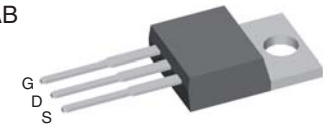
CoolMOS™ [1] Power MOSFET

I_{D25} = 10 A
V_{DSS} = 600 V
$R_{DS(on)\ max}$ = 0.385 Ω

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



TO-220 AB



MOSFET			
Symbol	**Conditions**	**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C	600	V
V_{GS}		± 20	V
I_{D25}	T_C = 25°C	10	A
I_{D90}	T_C = 90°C	7	A
E_{AS}	single pulse } I_D = 3.4 A; T_C = 25°C	225	mJ
E_{AR}	repetitive } I_D = 3.4 A; T_C = 25°C	0.3	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
	V_{DS} = 600 V; V_{GS} = 0 V; 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		790		pF
C_{oss}	V_{GS} = 0 V; V_{DS} = 100 V, f = 1 MHz		38		pF
Q_g	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 5.2 A		17	22	ns
Q_{gs}	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 5.2 A		4		ns
Q_{gd}	V_{GS} = 0 to 10 V; V_{DS} = 400 V; I_D = 5.2 A		6		ns
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 400 V; I_D = 5.2 A; R_G = 3.3 Ω		10		ns
t_r	V_{GS} = 10 V; V_{DS} = 400 V; I_D = 5.2 A; R_G = 3.3 Ω		5		ns
$t_{d(off)}$	V_{GS} = 10 V; V_{DS} = 400 V; I_D = 5.2 A; R_G = 3.3 Ω		40		ns
t_f	V_{GS} = 10 V; V_{DS} = 400 V; I_D = 5.2 A; R_G = 3.3 Ω		5		ns
R_{thJC}				1.15	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			5.2	A
V_{SD}	I_F = 5.2 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr}	I_F = 5.2 A; $-di_F/dt$ = 100 A/µs; V_R = 400 V		260		ns
Q_{RM}			3.1		µC
I_{RM}			24		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
Weight			2		g

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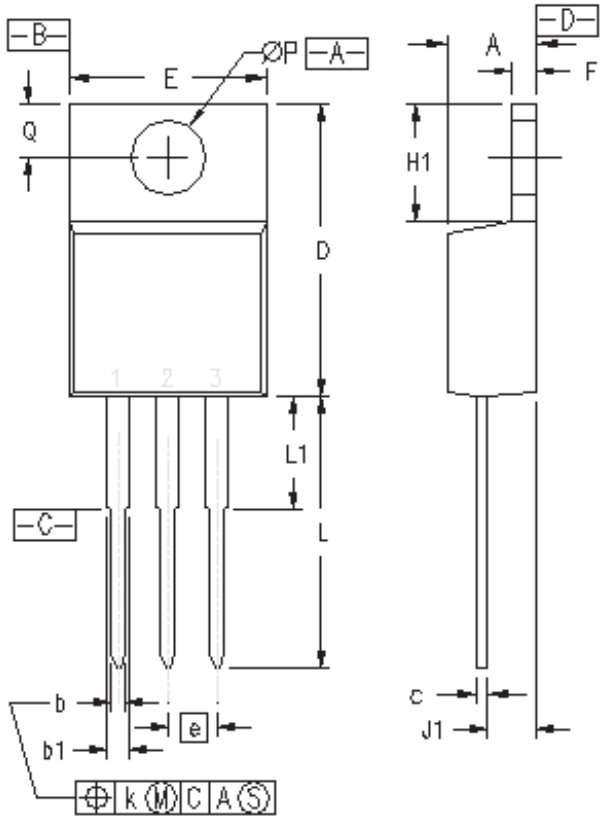
TO-220 AB Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-220 AB.

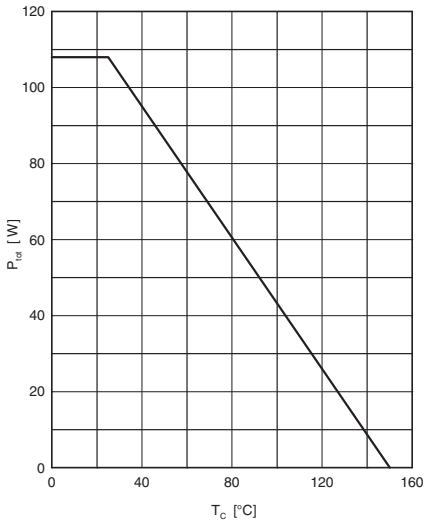


Fig. 1 Power dissipation

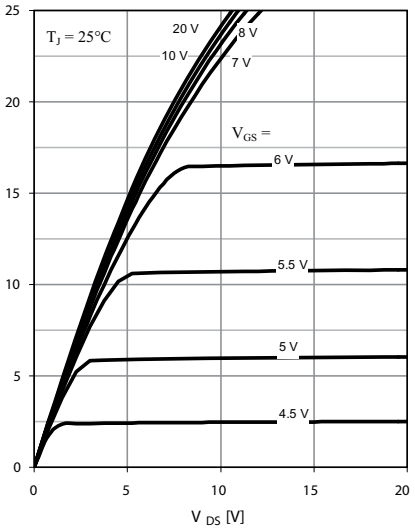


Fig. 2 Typ. output characteristics

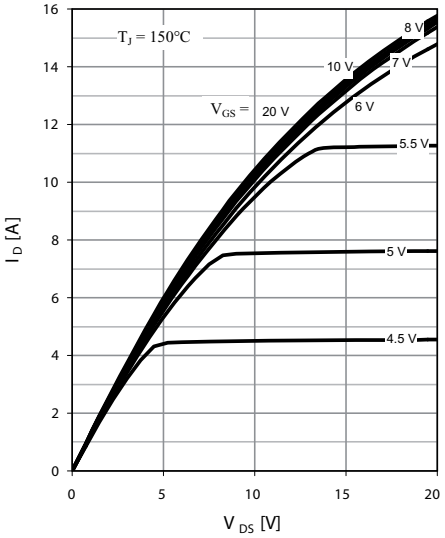


Fig. 3 Typ. output characteristics

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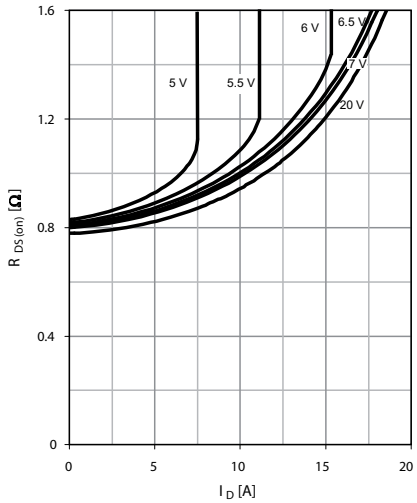

Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

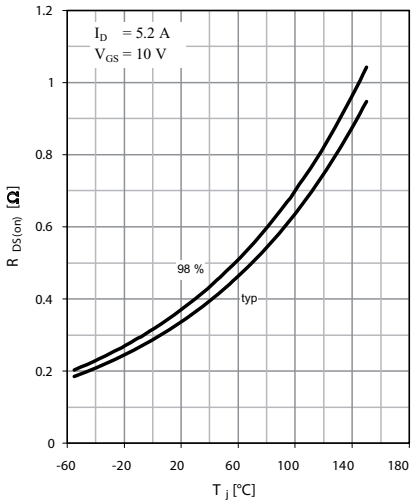

Fig. 5 Drain-source on-state resistance

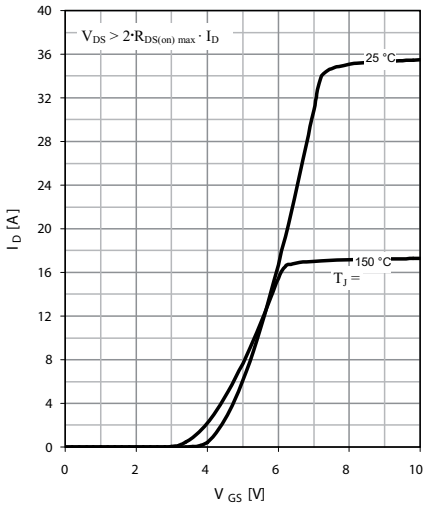

Fig. 6 Typ. transfer characteristics

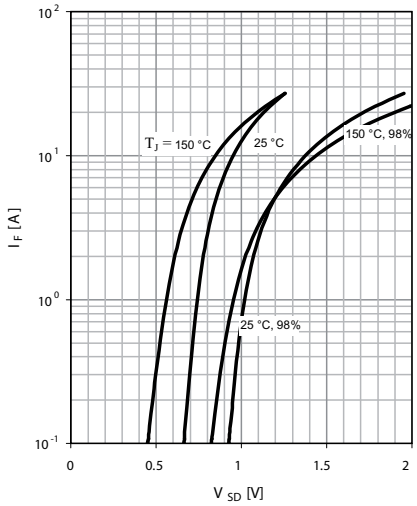

Fig. 7 Forward characteristic of reverse diode

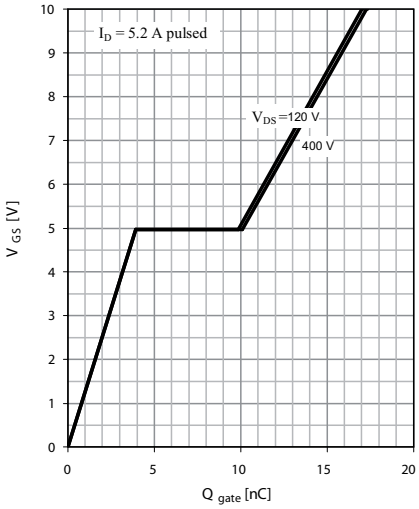

Fig. 8 Typ. gate charge

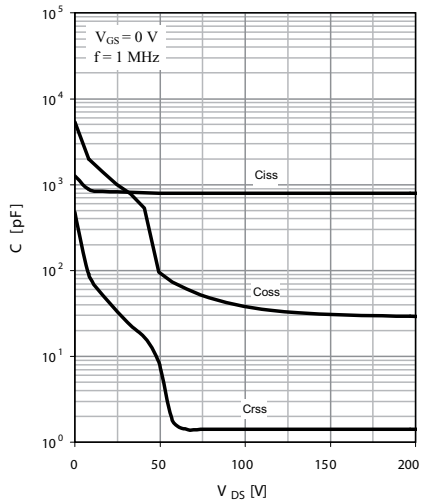

Fig. 9 Typ. capacitances

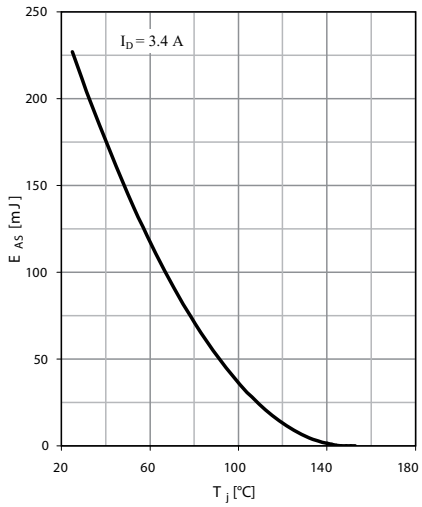

Fig. 10 Avalanche energy

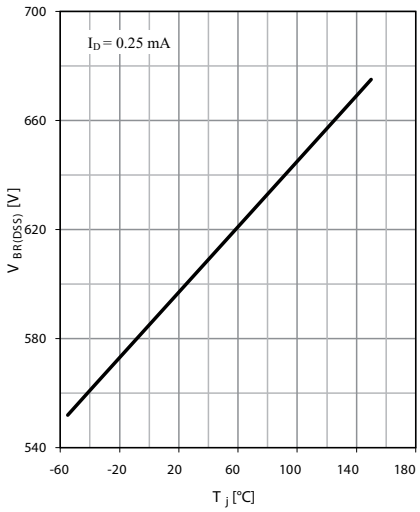

Fig. 11 Drain-source breakdown voltage

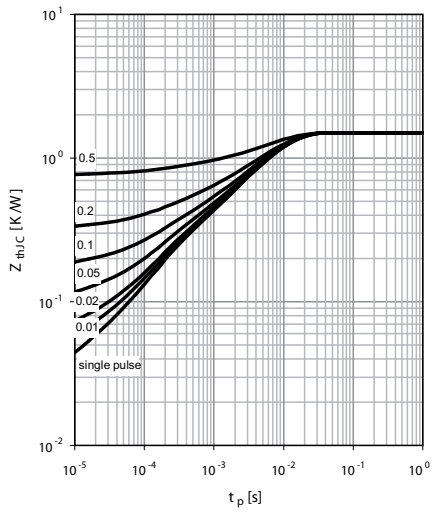

Fig. 12 Max. transient thermal impedance

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