

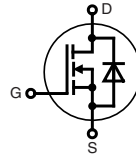
CoolMOS™ 1, Power MOSFET

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

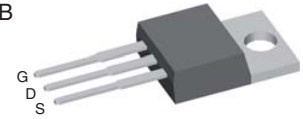
$$I_{D25} = 10 \text{ A}$$

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

$$R_{DS(on) \text{ max}} = 0.385 \Omega$$



TO-220 AB



MOSFET			
Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	10	A
I_{D90}	$T_C = 90^\circ\text{C}$	7	A
E_{AS}	single pulse	225	mJ
E_{AR}	repetitive		
		$I_D = 3.4 \text{ A}; T_C = 25^\circ\text{C}$	
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

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 5.2 \text{ A}$		350	385	m Ω
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 0.34 \text{ mA}$	2.5	3	3.5	V
I_{DSS}	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$			1	μA
	$T_{VJ} = 25^\circ\text{C}$				μA
	$T_{VJ} = 125^\circ\text{C}$		10		μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
C_{iss}	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		790		pF
C_{oss}			38		pF
Q_g	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 5.2 \text{ A}$		17	22	ns
Q_{gs}			4		ns
Q_{gd}			6		ns
$t_{d(on)}$	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 5.2 \text{ A}; R_G = 3.3 \Omega$		10		ns
t_r			5		ns
$t_{d(off)}$			40		ns
t_f			5		ns
R_{thJC}				1.15	K/W

1) CoolMOS™ is a trademark of
Infineon Technologies AG.

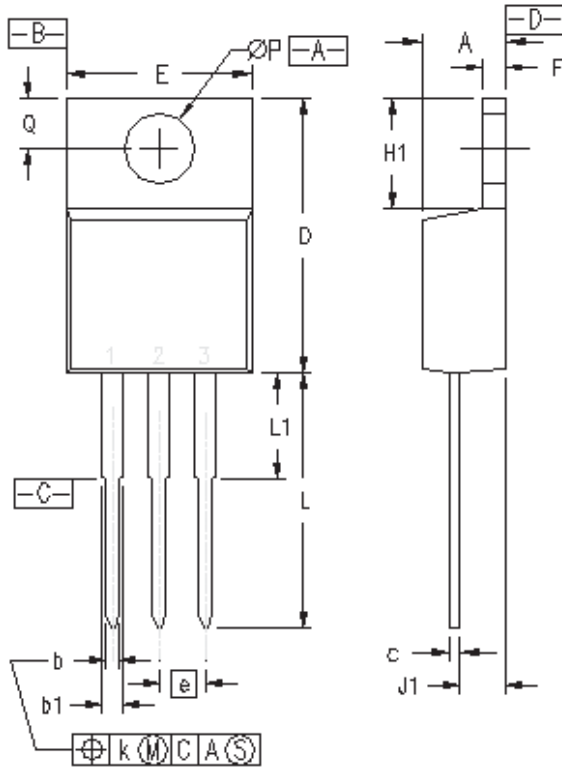
Source-Drain Diode

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)					
I_S	$V_{GS} = 0\text{ V}$			5.2	A
V_{SD}	$I_F = 5.2\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
t_{rr}	} $I_F = 5.2\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		260		ns
Q_{RM}			3.1		μC
I_{RM}			24		A

Component

Symbol	Conditions	Maximum Ratings			
		min.	typ.	max.	
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
Weight			2		g

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.

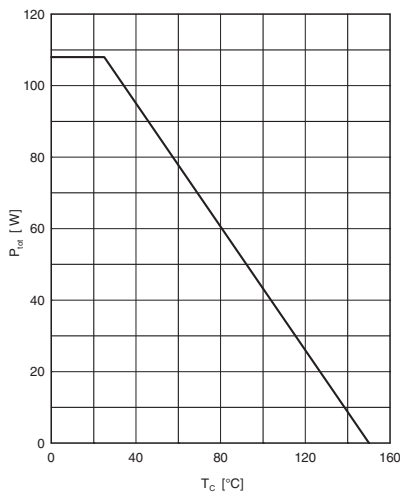


Fig. 1 Power dissipation

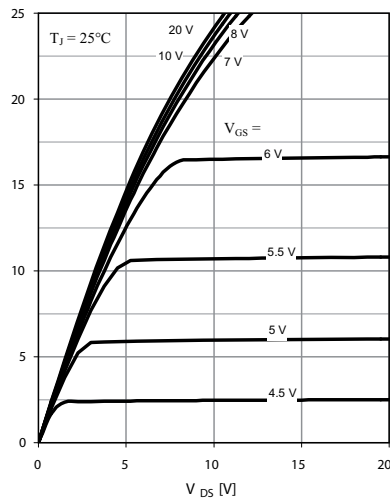


Fig. 2 Typ. output characteristics

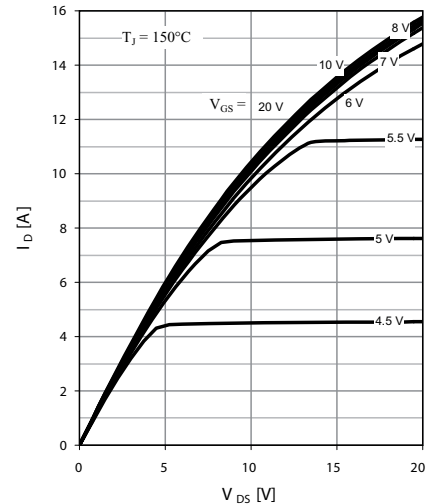


Fig. 3 Typ. output characteristics

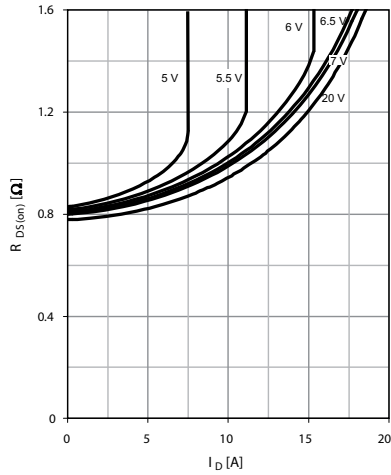


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

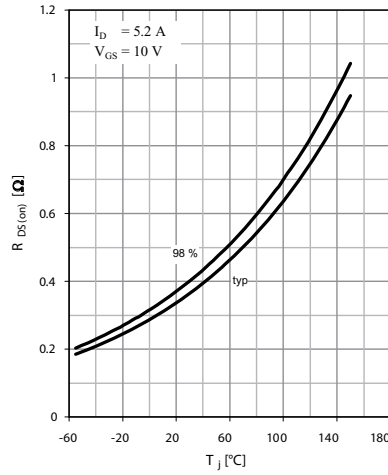


Fig. 5 Drain-source on-state resistance

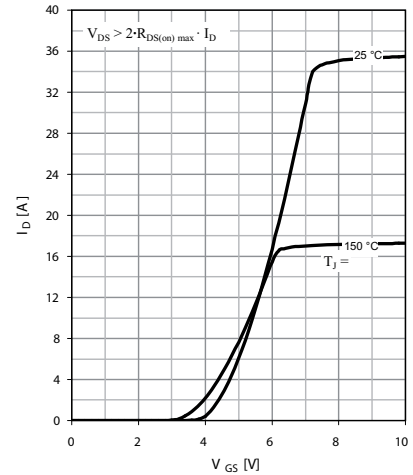


Fig. 6 Typ. transfer characteristics

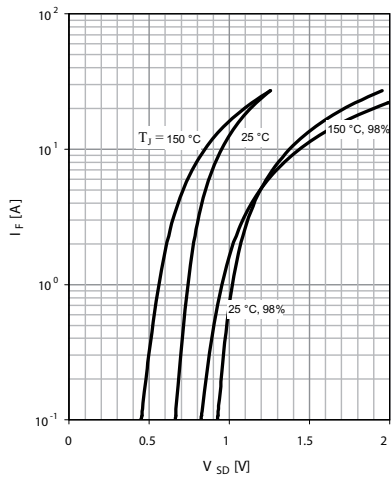


Fig. 7 Forward characteristic of reverse diode

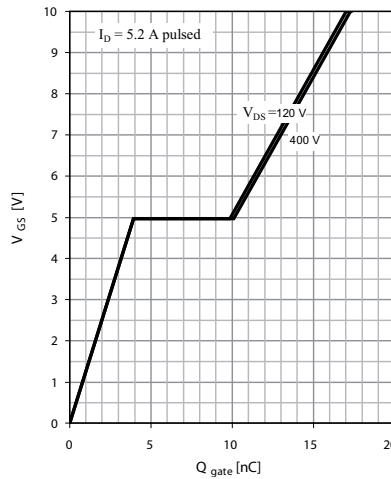


Fig. 8 Typ. gate charge

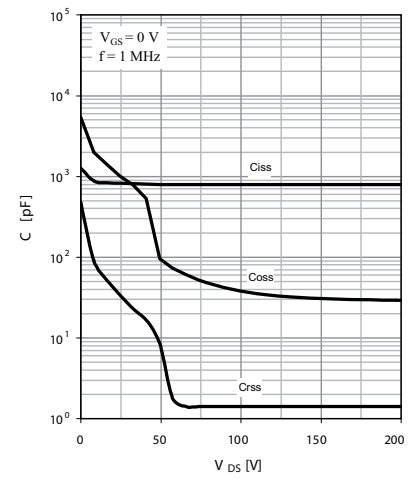


Fig. 9 Typ. capacitances

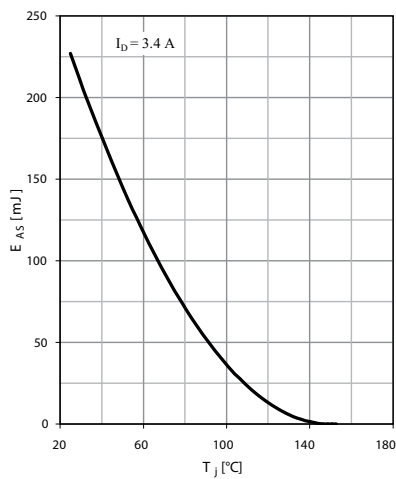


Fig. 10 Avalanche energy

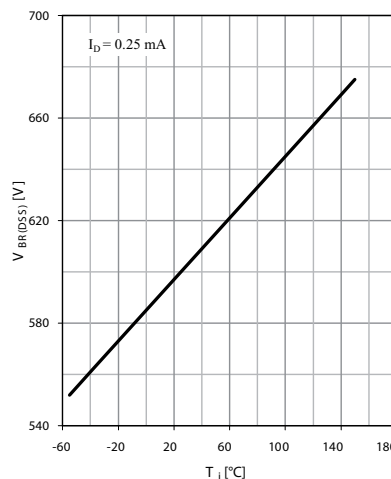


Fig. 11 Drain-source breakdown voltage

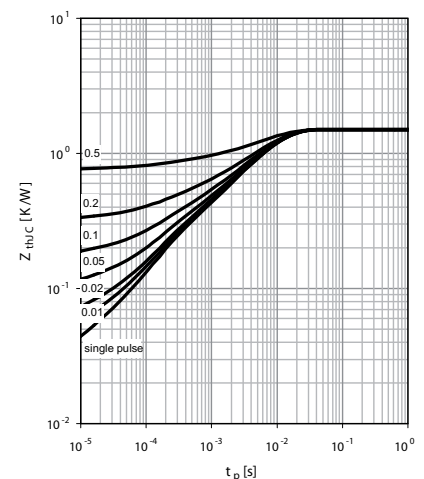


Fig. 12 Max. transient thermal impedance