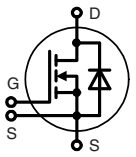
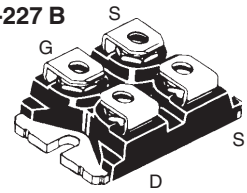
CoolMOS™ [1] Power MOSFET

V_{DSS}	I_{D25}	$R_{DS(on)}$
600 V	75 A	36 mΩ

N-Channel Enhancement Mode
Low R_{DSon}, High V_{DSS} MOSFET



miniBLOC, SOT-227 B



G = Gate D = Drain S = Source

Either source terminal at miniBLOC can be used as main or kelvin source

MOSFET

Symbol	Conditions	Maximum Ratings	
V_{DSS}	T_{VJ} = 25°C to 150°C	600	V
V_{GS}		±20	V
I_{D25}	T_C = 25°C	75	A
I_{D90}	T_C = 90°C	50	A
dv/dt	$V_{DS} < V_{DSS}$; $I_F \le 100A$; $\lvert di_F/dt \rvert \le 100A/\mu s$; T_{VJ} = 150°C	6	V/ns
E_{AS}	I_D = 10 A; L = 36 mH; T_C = 25°C	1.8	J
E_{AR}	I_D = 20 A; L = 5 µH; T_C = 25°C	1	mJ

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; $I_D = I_{D90}$		30	36	mΩ
V_{GSth}	V_{DS} = 20 V; I_D = 5 mA;	2.1		3.9	V
I_{DSS}	$V_{DS} = V_{DSS}$; V_{GS} = 0 V; T_{VJ} = 25°C			50	µA
	T_{VJ} = 125°C		100		µA
I_{GSS}	V_{GS} = ±20 V; V_{DS} = 0 V			200	nA
Q_g	V_{GS}= 10 V; V_{DS} = 350 V; I_D = 100 A		500		nC
Q_{gs}			50		nC
Q_{gd}			240		nC
$t_{d(on)}$	V_{GS}= 10 V; V_{DS} = 380 V;		20		ns
t_r	I_D = 100 A; R_G = 1 Ω		30		ns
$t_{d(off)}$			110		ns
t_f			10		ns
V_F	(reverse conduction) I_F = 37.5 A; V_{GS} = 0 V		0.9	1.1	V
R_{thJC}				0.22	K/W

Features

- miniBLOC package
  - Electrically isolated copper base
  - Low coupling capacitance to the heatsink for reduced EMI
  - High power dissipation due to AlN ceramic substrate
  - International standard package SOT-227
  - Easy screw assembly
- fast CoolMOS™ [1] power MOSFET 3rd generation
  - High blocking capability
  - Low on resistance
  - Avalanche rated for unclamped inductive switching (UIS)
  - Low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

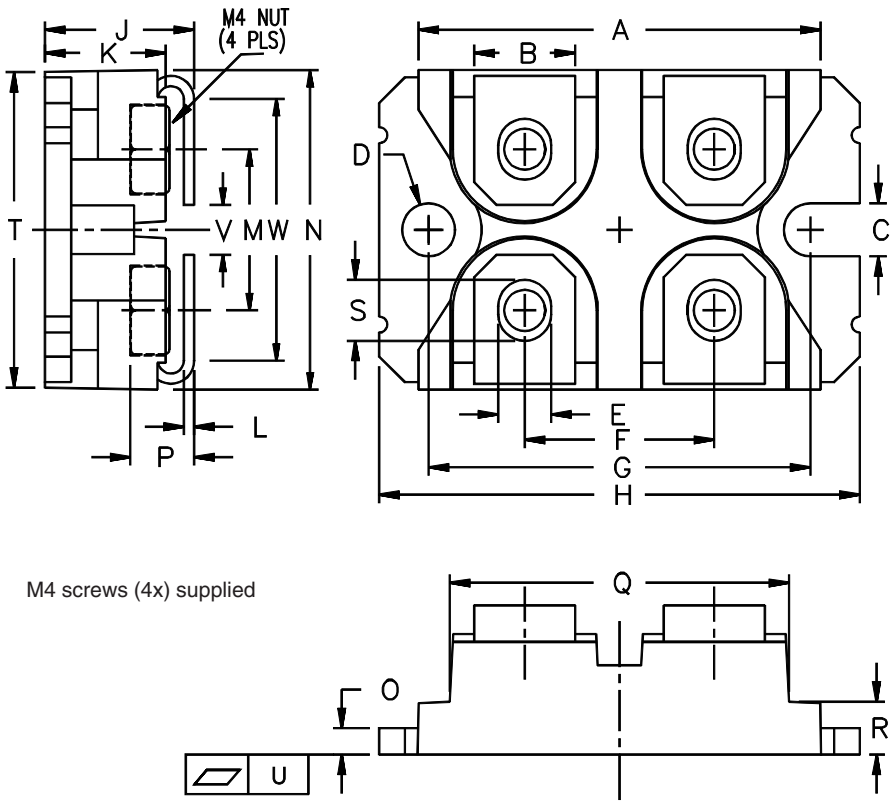
- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

[1] CoolMOS™ is a trademark of Infineon Technologies AG.

Component		
Symbol	**Conditions**	**Maximum Ratings**
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz	2500 V~
T_{VJ}		-40...+150 °C
T_{stg}		-40...+125 °C
M_d	mounting torque	1.5 Nm
	terminal connection torque (M4)	1.5 Nm

Symbol	Conditions	Characteristic Values min.	typ.	max.
R_{thCH}	with heatsink compound		0.1	K/W
Weight			30	g

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	19.81	21.08

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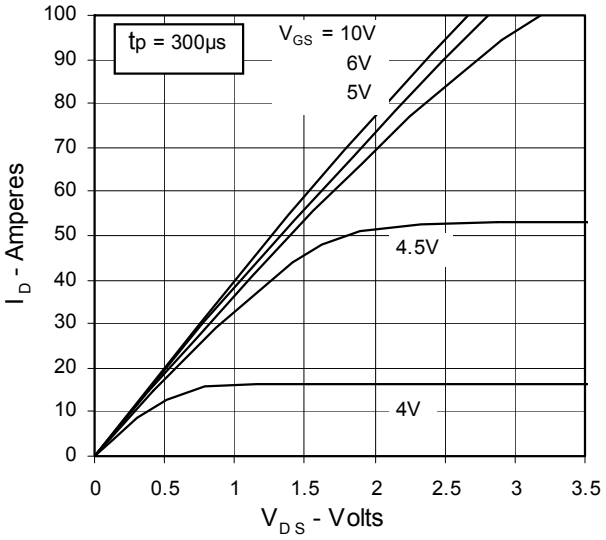

Fig. 1 Typical output characteristics $I_D = f(V_{DS})$

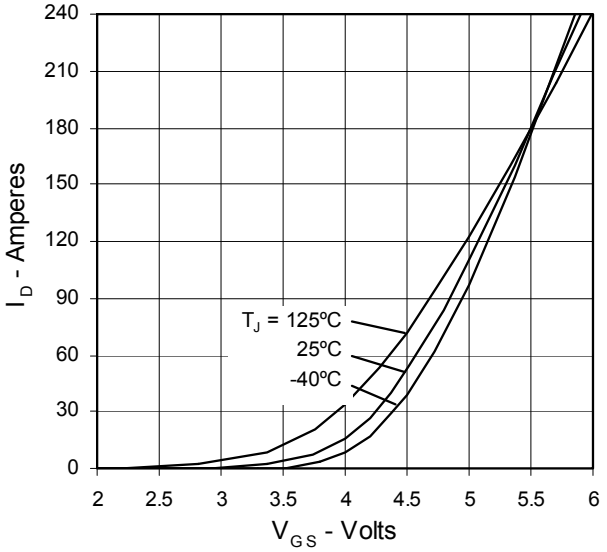

Fig. 2 Typical transfer characteristics $I_D = f(V_{GS})$

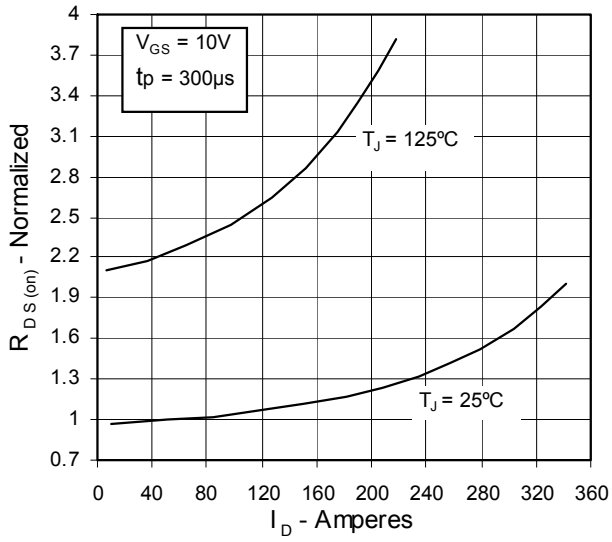

Fig. 3 Typical normalized $R_{DS(on)} = f(I_D)$

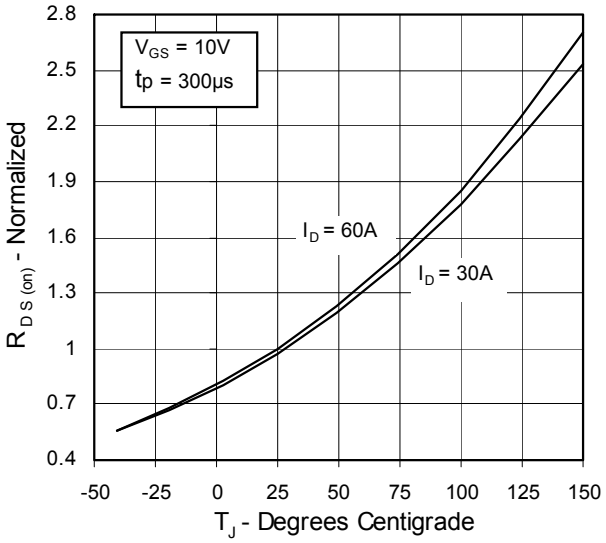

Fig. 4 Typical normalized $R_{DS(on)} = f(T_J)$

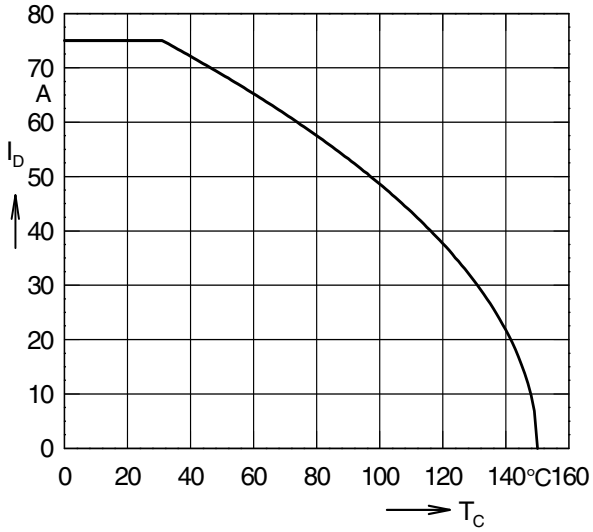

Fig. 5 Continuous drain current $I_D = f(T_C)$

Fig. 6 Typical normalized $V_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$

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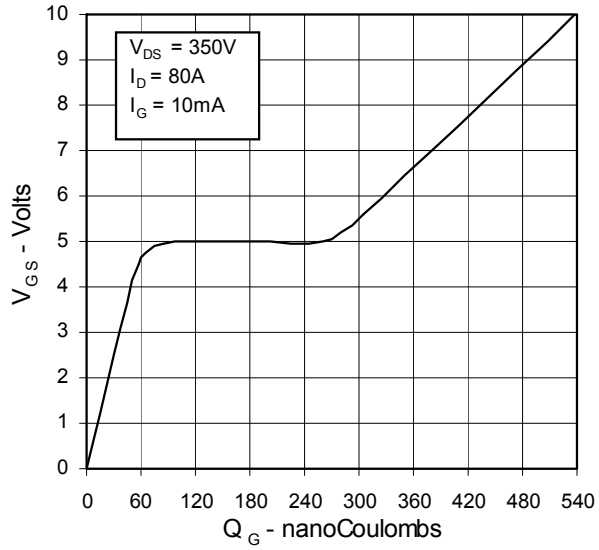

Fig. 7 Typical turn-on gate charge characteristics

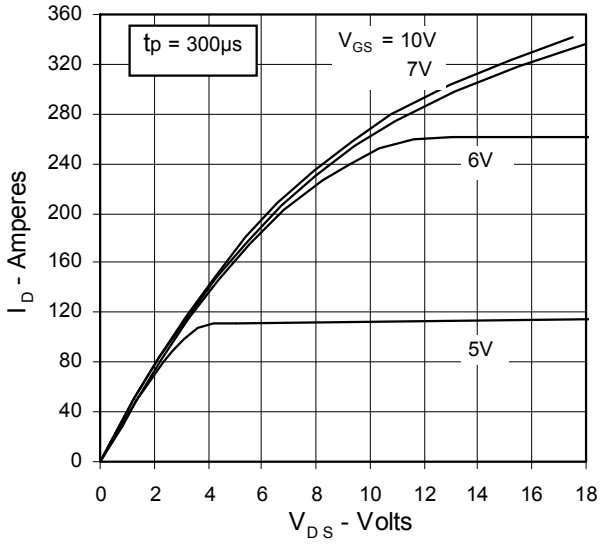

Fig. 8 Forward Safe Operating Area, $I_D = f(V_{DS})$

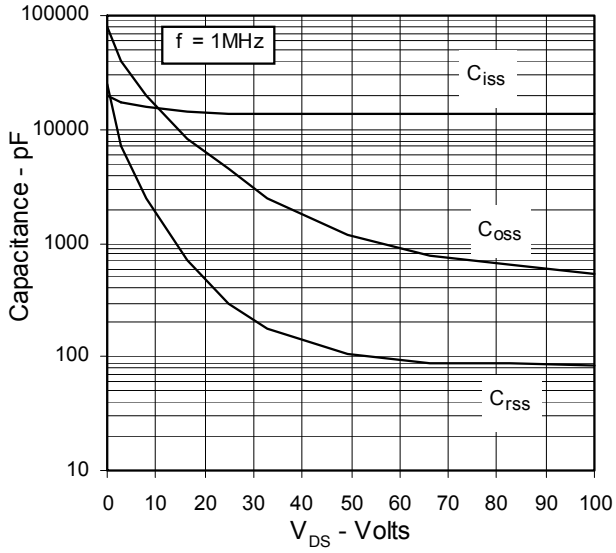

Fig. 9 Typical capacitances $C = f(V_{DS})$, f = 1 MHz

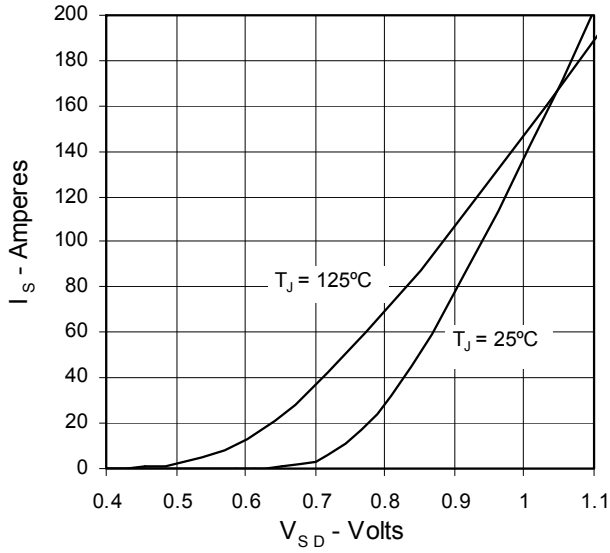

Fig. 10 Typ. forward characteristics of reverse diode, $I_S = f(V_{SD})$

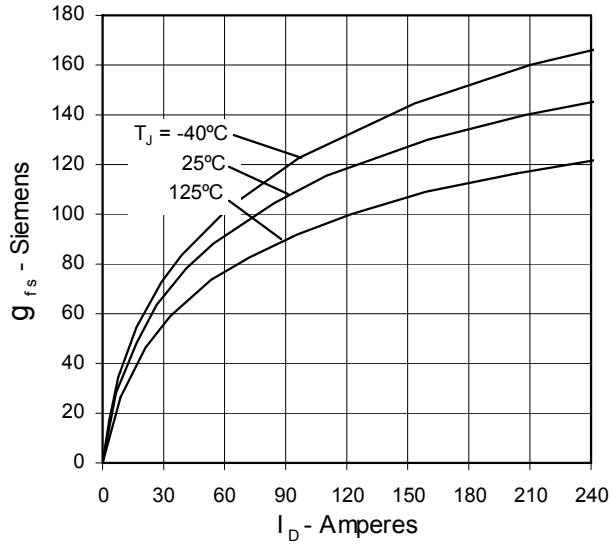

Fig. 11 Typical transconductance $g_{fs} = f(I_D)$

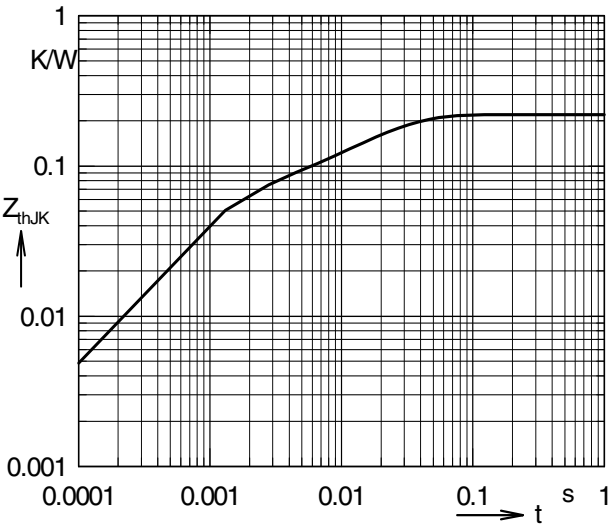

Fig. 12 Transient thermal resistance $Z_{thJK} = f(t_p)$

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