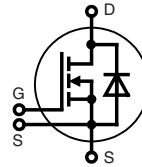


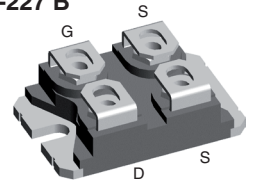
CoolMOS™ 1) Power MOSFET

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

$$\begin{aligned} V_{DSS} &= 600 \text{ V} \\ I_{D25} &= 75 \text{ A} \\ R_{DS(on) \text{ max}} &= 36 \text{ m}\Omega \end{aligned}$$



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}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V	
V_{GS}		± 20	V	
I_{D25}	$T_C = 25^{\circ}\text{C}$	75	A	
I_{D90}	$T_C = 90^{\circ}\text{C}$	50	A	
$I_{D \text{ puls}}$	pulse drain current, t_p limited by T_{Jmax}	250	A	
E_{AS}	$I_D = 10 \text{ A}; L = 36 \text{ mH}$	$T_C = 25^{\circ}\text{C}$	1.8	J
E_{AR}	$I_D = 20 \text{ A}; L = 5 \text{ mH}$	$T_C = 25^{\circ}\text{C}$	1	mJ
dv/dt	$V_{DS} < V_{DSS}; I_F \leq 100 \text{ A}$ $ di_F/dt \leq 100 \text{ A}/\mu\text{s}$	$T_{VJ} = 125^{\circ}\text{C}$	6	V/ns

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^{\circ}\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = I_{D90}$		30	36	m Ω
$V_{GS(th)}$	$V_{DS} = 20 \text{ V}; I_D = 5 \text{ mA}$	2.1		3.9	V
I_{DSS}	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$				μA
			100	50	μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			± 200	nA
Q_g	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 350 \text{ V}; I_D = 100 \text{ A}$		500		nC
Q_{gs}			50		nC
Q_{gd}			240		nC
$t_{d(on)}$	$V_{GS} = 10 \text{ V}; V_{DS} = 380 \text{ V}$ $I_D = 100 \text{ A}; R_G = 1.0 \Omega$		20		ns
t_r			30		ns
$t_{d(off)}$			110		ns
t_f			10		ns
V_F	(reverse conduction) $I_F = 37.5 \text{ A}; V_{GS} = 0 \text{ V}$		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.

Source-Drain Diode

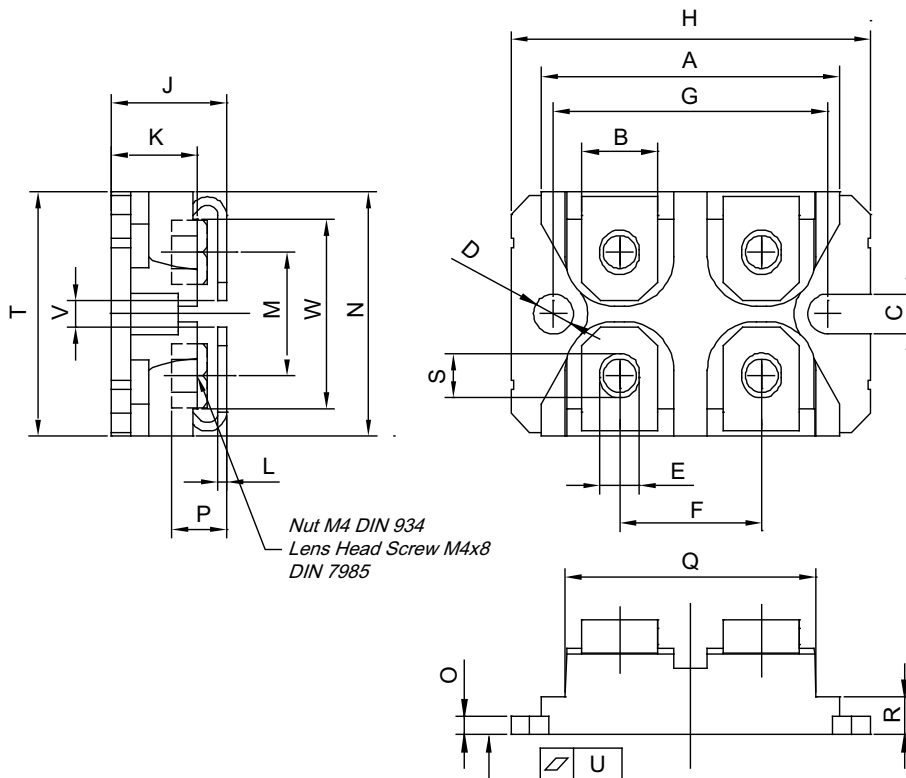
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			85
I_{SM}				250
V_{SD}	$I_F = 85\text{ A}; V_{GS} = 0\text{ V}$			1.2
t_{rr}	$I_F = 85\text{ A}; -di_F/dt = 200\text{ A}/\mu\text{s}; V_R = 350\text{ V}$	580		ns
Q_{RM}		46		μC
I_{RM}		140		A

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}		-55...+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 Outline



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.50	31.88	1.240	1.255
B	7.80	8.20	.307	.323
C	4.09	4.29	.161	.169
D	4.09	4.29	.161	.169
E	4.09	4.29	.161	.169
F	14.91	15.11	.587	.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.489	1.505
J	11.68	12.22	.460	.481
K	8.92	9.60	.351	.378
L	0.76	0.84	.030	.033
M	12.60	12.85	.496	.506
N	25.15	25.42	.990	1.001
O	1.98	2.13	.078	.084
P	4.95	5.97	.195	.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	.155	.174
S	4.72	4.85	.186	.191
T	24.59	25.07	.968	.987
U	-.05	.10	-.002	.004
V	3.30	4.57	.130	.180
W	19.81	21.08	.780	.830

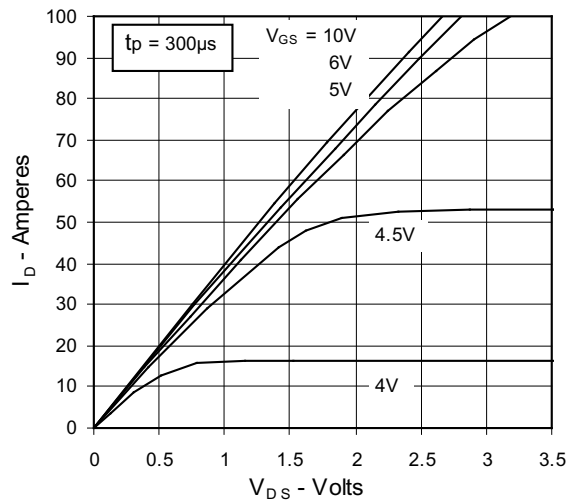


Fig. 1 Typ. output characteristics $I_D = f(V_{DS})$

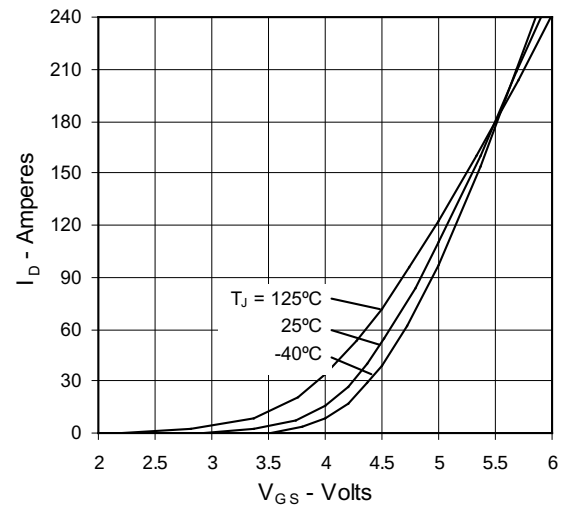


Fig. 2 Typ. transfer characteristics $I_D = f(V_{GS})$

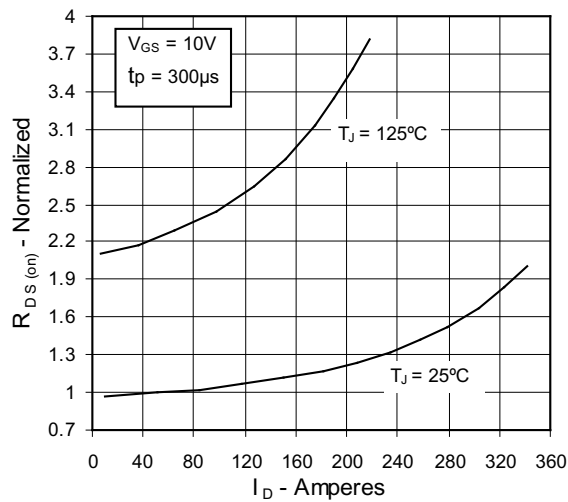


Fig. 3 Typical normalized $R_{DS(on)} = f(I_D)$

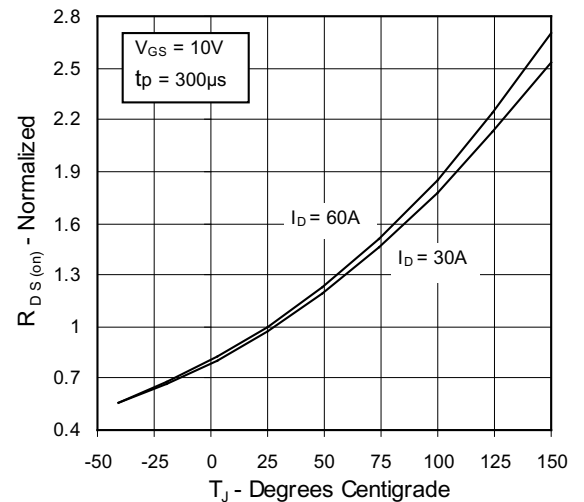


Fig. 4 Typical normalized $R_{DS(on)} = f(T_J)$

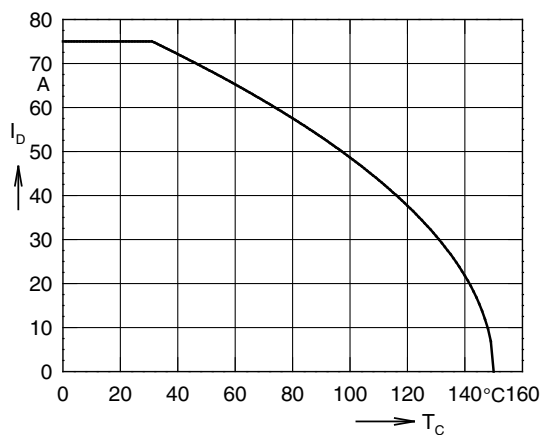


Fig. 5 Continuous drain current $I_D = f(T_C)$

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

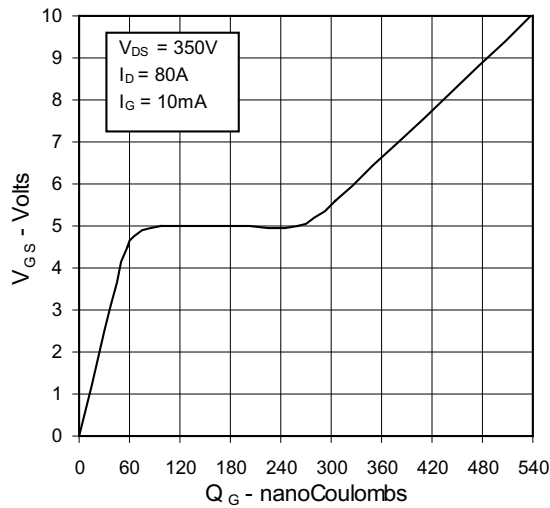


Fig. 7 Typ. turn-on gate charge characteristics

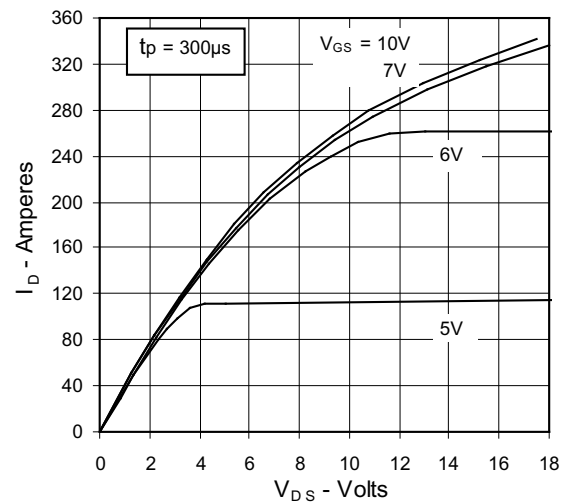


Fig. 8 Forward Safe Operating Area, $I_D = f(V_{DS})$

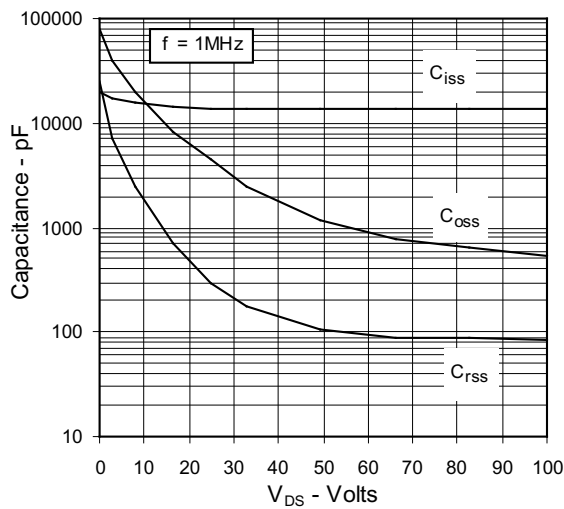


Fig. 9 Typ. capacitances $C = f(V_{DS})$, $f = 1 \text{ MHz}$

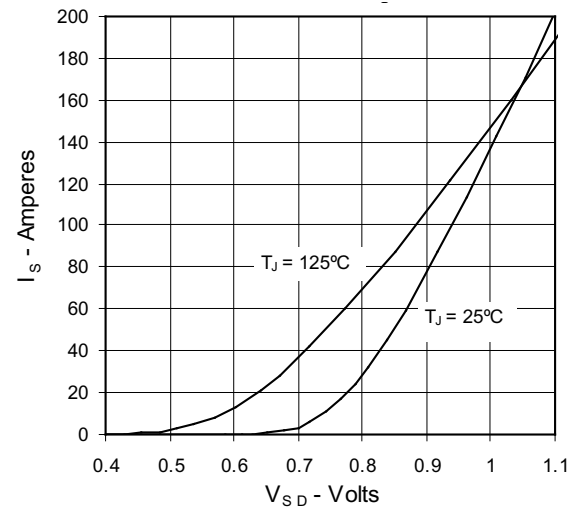


Fig. 10 Typ. forward characteristics of reverse diode, $I_S = f(V_{SD})$

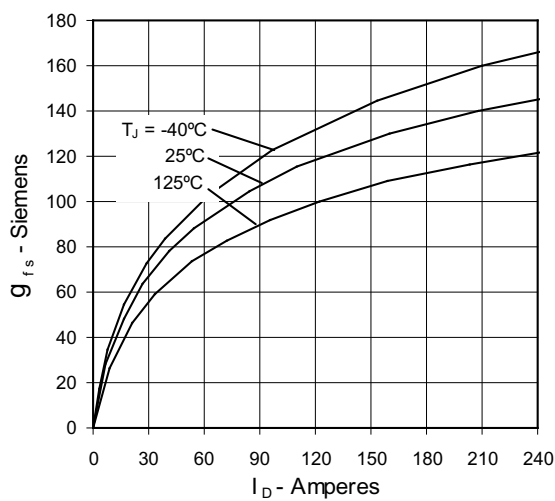


Fig. 11 Typical transconductance $g_{fs} = f(I_D)$

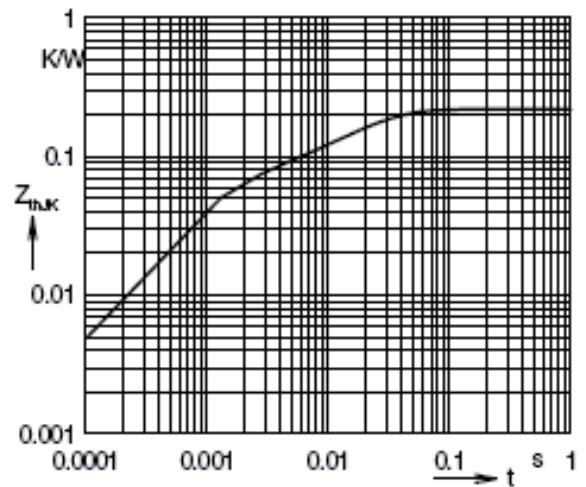


Fig. 12 Transient thermal resistance $Z_{thJK} = f(t_p)$

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