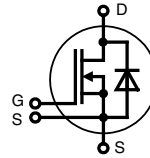


# CoolMOS™ 1) Power MOSFET

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

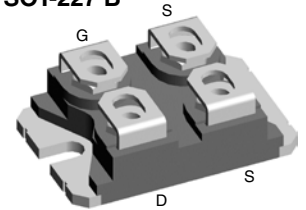
$V_{DSS} = 800\text{ V}$   
 $I_{D25} = 44\text{ A}$   
 $R_{DS(on)\text{ max}} = 74\text{ m}\Omega$



**miniBLOC, SOT-227 B**

E72873

G = Gate  
S = Source  
D = Drain



Either source terminal at miniBLOC can be used as main or Kelvin Source

MOSFET			
Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^\circ\text{C}$	800	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	44	A
$I_{D90}$	$T_C = 90^\circ\text{C}$	30	A
$dv/dt$	$V_{DS} < V_{DSS}; I_F = 17\text{ A};  di_F/dt  < 100\text{ A}\mu\text{s}$	6	V/ns
$E_{AS}$	$I_D = 4\text{ A}; L = 80\text{ mH}; T_C = 25^\circ\text{C}$	670	mJ
$E_{AR}$	$I_D = 17\text{ A}; L = 3\text{ mH}; T_C = 25^\circ\text{C}$	0.5	mJ

## Features

- miniBLOC package
  - Electrically isolated copper base
  - Low coupling capacitance to the heatsink for reduced EMI
  - International standard package SOT-227
  - Easy screw assembly
- CoolMOS™ 1) power MOSFET 3<sup>rd</sup> generation
  - high blocking capability
  - lowest resistance
  - avalanche rated for unclamped inductive switching (UIS)
  - low thermal resistance due to reduced chip thickness
- fast CoolMOS™ 1) power MOSFET 3<sup>rd</sup> 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

Symbol	Conditions	Characteristic Values				
		$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$				
		min.	typ.	max.		
$R_{DS(on)}$	$V_{GS} = 10\text{ V}; I_D = I_{25}$		63	74	m $\Omega$	
$V_{GS(th)}$	$V_{GS} = V_{DS}; I_D = 4\text{ mA}$	2.1		3.9	V	
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		200	50	$\mu\text{A}$ $\mu\text{A}$	
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			400	nA	
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10\text{ V}; V_{DS} = 640\text{ V}; I_D = 70\text{ A}$		360		nC	
				48		nC
				184		nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10\text{ V}; V_{DS} = 400\text{ V}$ $I_D = 70\text{ A}; R_G = 1.2\text{ }\Omega; T_{VJ} = 125^\circ\text{C}$		25		ns	
				15		ns
				75		ns
				10		ns
$R_{thJC}$				0.33	K/W	

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

**Source-Drain Diode**

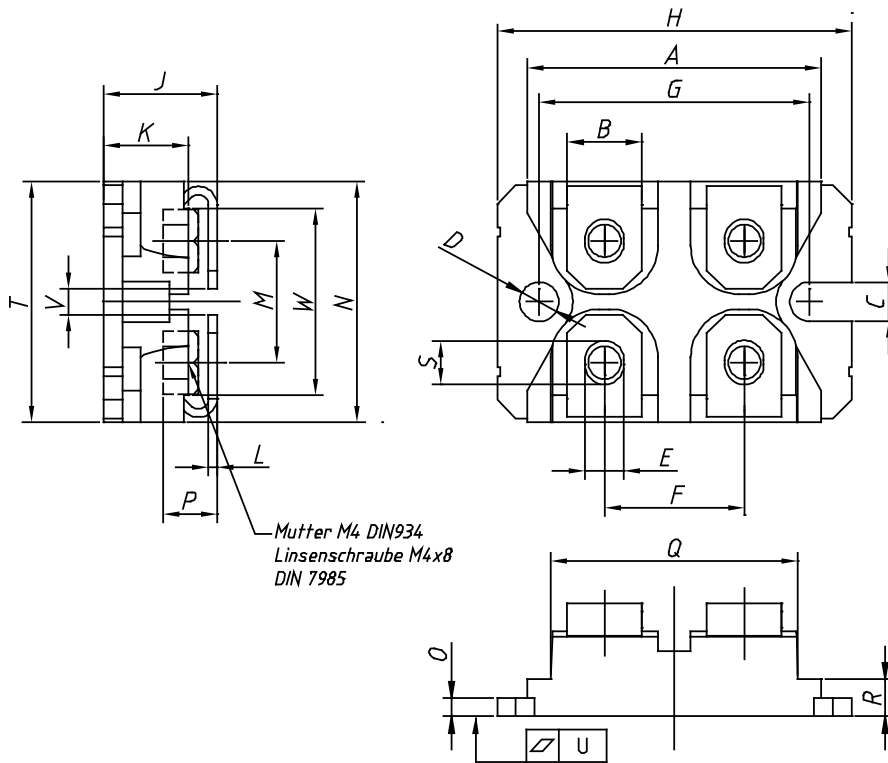
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			60	A
$V_{SD}$	$I_F = 65\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	$I_F = 80\text{ A}; -di_F/dt = 400\text{ A}/\mu\text{s}; V_R = 480\text{ V}$		500	800	ns
$Q_{RM}$			45		$\mu\text{C}$
$I_{RM}$			280		A

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-55...+150	$^{\circ}\text{C}$
$T_{stg}$	storage	-55...+125	$^{\circ}\text{C}$
$V_{ISOL}$	$I_{ISOL} < 1\text{ mA}, 50/60\text{ Hz}$	2500	V~
$M_d$	mounting torque	1.5	Nm
	terminal connection torque	1.5	Nm

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

## miniBLOC, SOT-227 B



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

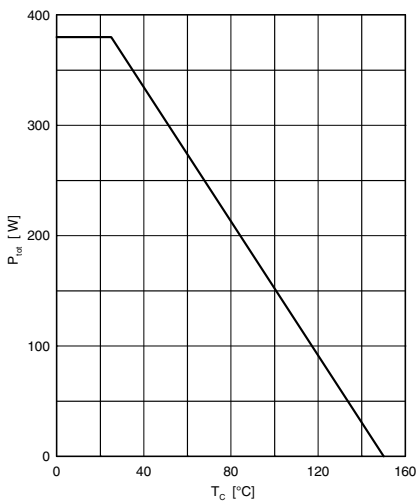


Fig. 1 Power dissipation

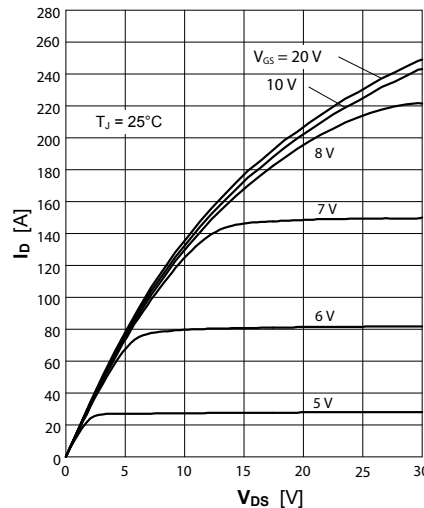


Fig. 2 Typ. output characteristics

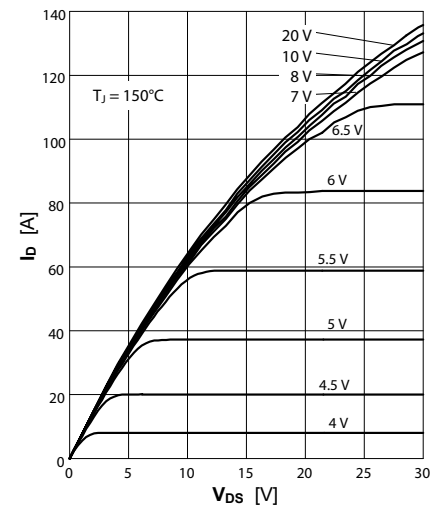


Fig. 3 Typ. output characteristics

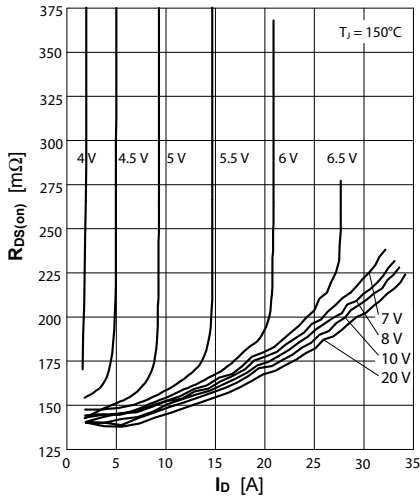


Fig. 4 Typ. drain-source on-state resistance

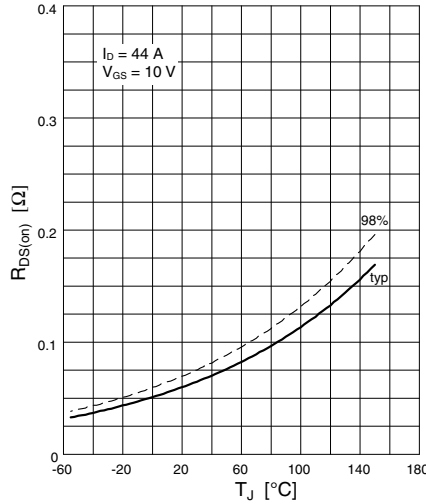


Fig. 5 Drain-source on-state resistance

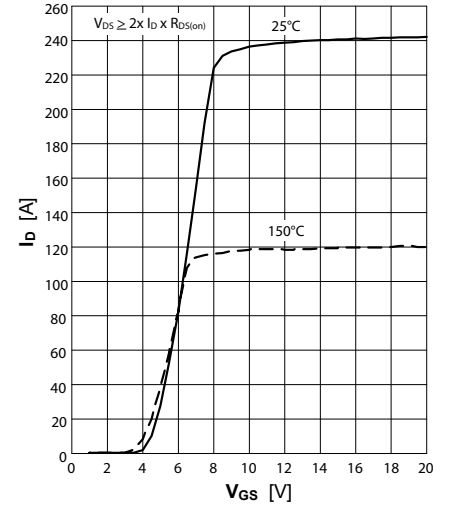


Fig. 6 Typ. transfer characteristics

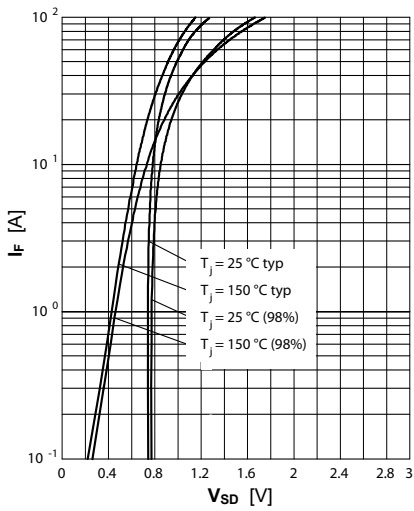


Fig. 7 Forward characteristic of reverse diode

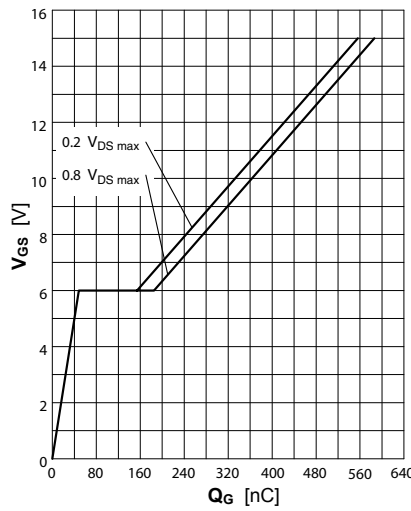


Fig. 8 Typ. gate charge

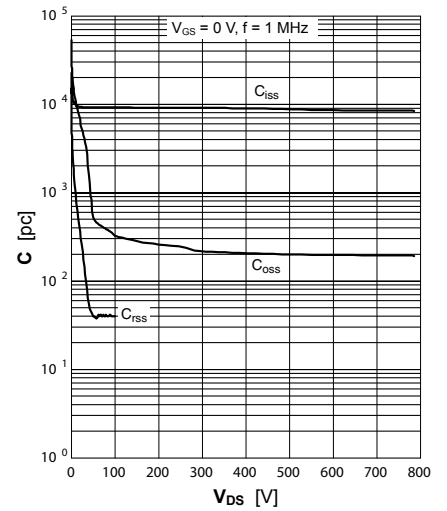


Fig. 9 Typ. capacitances

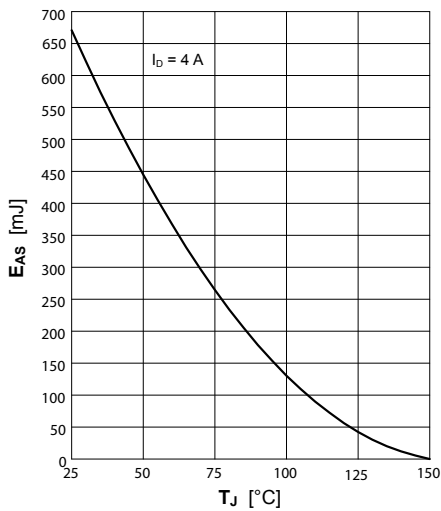


Fig. 10 Avalanche energy

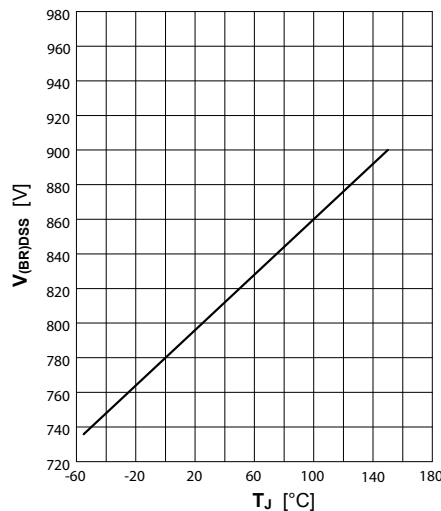


Fig. 11 Drain-source breakdown voltage



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