DACO SEMICONDUCTOR CO., LTD.

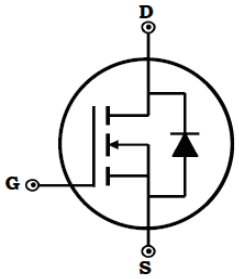
DAMI500N60

N-Channel Enhancement Mode MOSFET

Features

Preliminary

- V_{DSS} = 60V
- $R_{DS(ON)}$ < 1.1 mΩ@ V_{GS} = 10 V
- Fully Avalanche Rated
- Pb Free & RoHS Compliant
- Isolation Type Package
- Electrically Isolation Base Plate



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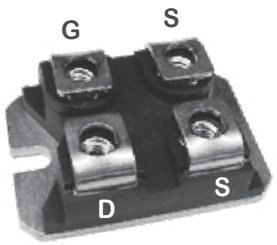


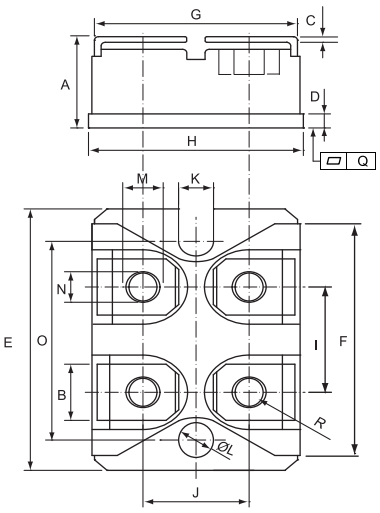
Applications

- Backlighting
- Power Converters
- Synchronous Rectifiers
- Battery Chargers
- AC Motor Drivers

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous @ T_C =25°C @ T_C =100°C	I_D	500 400	A
Drain Current-Pulsed @ T_C =25°C Note1	I_{DM}	1500	A
Maximum Power Dissipation	P_D	1200	W
Storage Temperature Range	T_{STG}	-50 to +150	°C
Operating Junction Temperature Range	T_J	-50 to +150	°C
Thermal Resistance, Junction-to-Case	$R\theta_{JC}$	0.12	°C/W
Isolation Voltage (A.C. 1 minute)	V_{iso}	2500	V
Mounting torque (M4 Screw) To heatsink To terminals	M_d	1.5 1.3	N m

Dimensions in inches and (millimeters)



DIMENSIONS				
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.460	0.483	11.68	12.28
B	0.307	0.323	7.80	8.20
C	0.030	0.033	0.75	0.85
D	0.071	0.081	1.80	2.05
E	1.488	1.504	37.80	38.20
F	1.248	1.260	31.70	32.00
G	0.917	0.957	23.30	24.30
H	0.996	1.008	25.30	25.60
I	0.579	0.602	14.70	15.30
J	0.492	0.516	12.50	13.10
K	0.161	0.169	4.10	4.30
L	0.161	0.169	4.10	4.30
M	0.181	0.197	4.60	5.00
N	0.165	0.181	4.20	4.60
O	1.181	1.197	30.00	30.40
Q	-0.002	0.004	-0.05	0.10
R	M4*8			

Electrical Characteristics @ T_J =25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V，I_{DS}=3mA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V，V_{DS}=60V	-	-	50	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V，V_{DS}=0V	-	-	200	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	V_{DS}=V_{GS}，I_{DS}=8mA	2.5	-	3.5	V
Drain-Source On-State Resistance	R_{DS}	V_{GS}=10V，I_{DS}=100A	-	0.9	1.1	mΩ
Gate Resistance	R_G		-	1.9	2.9	Ω
Forward Transconductance	g_{fs}	V_{DS}=2.5V，I_D =270A[Note1]	-	160	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V	-	50760	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	4083	-	
Reverse Transfer Capacitance	C_{rss}	Freq.=1MHz	-	1272	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=0.5V V_{GS}=10V I_{DS}=100A	-	80	-	ns
Rise Time	t_r		-	220	-	
Turn-Off Delay Time	$t_{d(off)}$		-	280	-	
Fall Time	t_f		-	320	-	
Total Gate Charge at 10V	Q_g	V_{DS}=10V V_{GS}=10V I_{DS}=100A	-	879	-	nC
Gate to Source Charge	Q_{gs}		-	185	-	
Gate to Drain Charge	Q_{gd}		-	369	-	
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_F	T_J =25°C，I_F=100A	-	-	0.9	V
Diode Continuous Forward Current	I_F		-	-	400	A
Diode Pulsed Current [Note1]	$I_{F,pulse}$		-	-	1500	A
Reverse Recovery time	T_{RR}	I_F=0.5V，I_R=1.0A，I_{RR}=0.25A	-	-	324	ns

Notes:

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle > 2%.

Typical Characteristics

Fig 1. Power dissipation

P_{tot} =f(T_C)

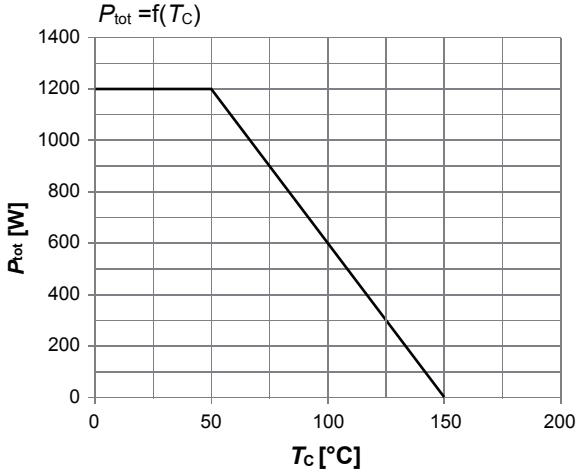


Fig 2. Drain current

I_D=f(T_C); V_{GS} ≥10V

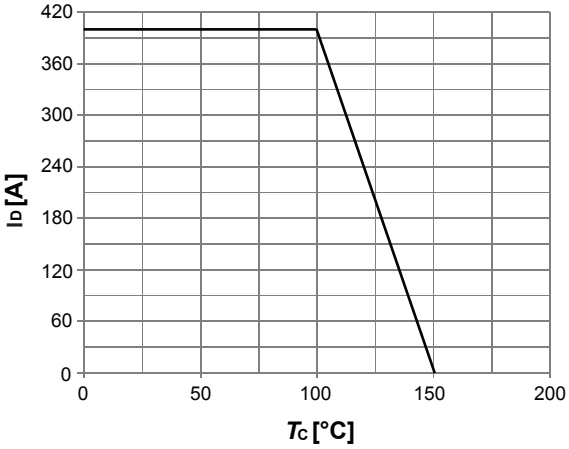


Fig 3. Safe operating area

I_D=f(V_{DS}); T_C=25°C; D=0;parameter: t_p

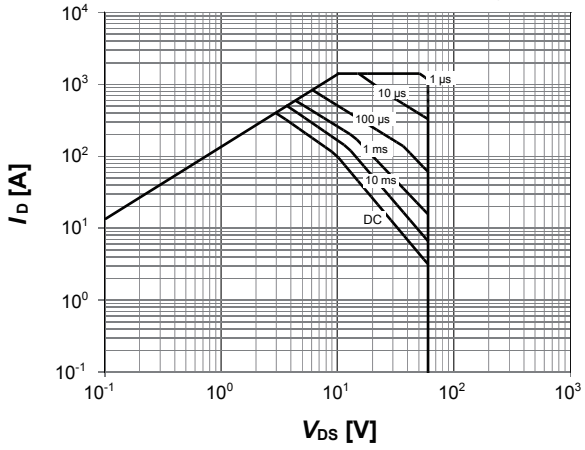


Fig 4. Maximium Transient Thermal Impedance

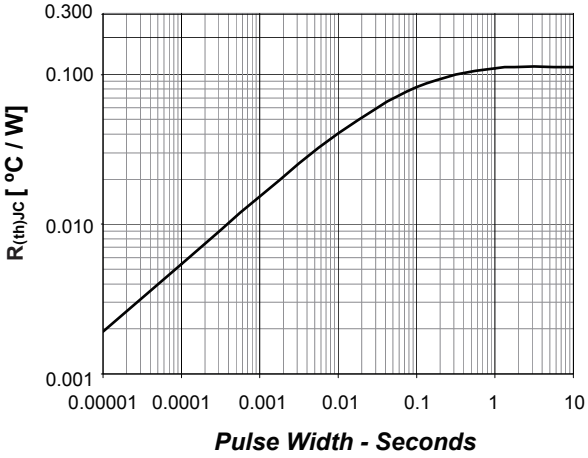


Fig 5. Typ. output characteristics

I_D=f(V_{DS}); T_j=25°C;parameter: V_{GS}

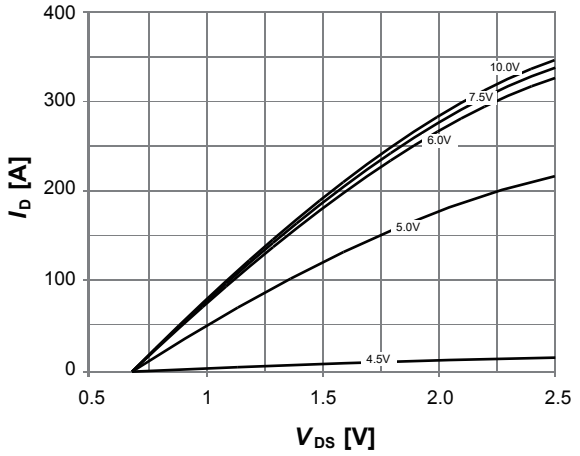
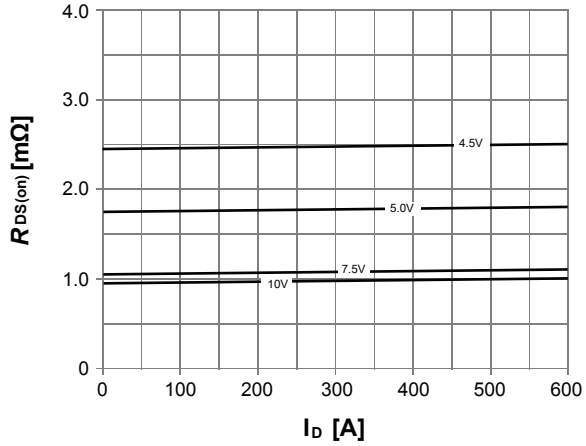


Fig 6. Typ. drain-source on resistance

$R_{DS(on)}$=f(I_D); T_j=25°C;parameter: V_{GS}



Typical Characteristics

Fig 7. Typ. transfer characteristics

I_D=f(V_{GS});| V_{DS}|>2|I_D|$R_{DS(on)max}$;parameter: T_j

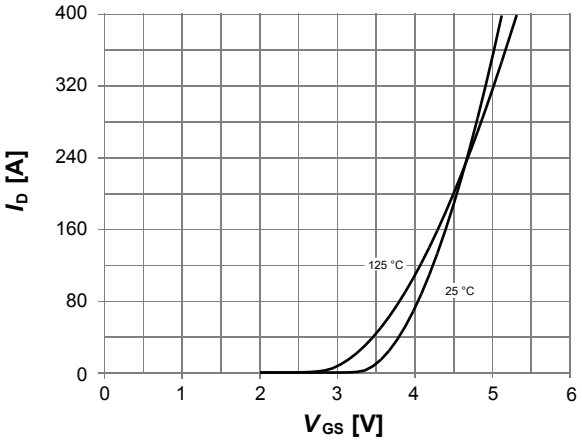


Fig 8. Typ. forward transconductance

g_{fs}=f(I_D); T_j=25°C

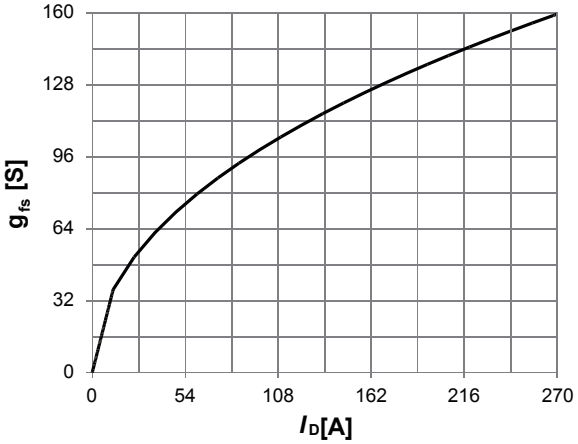


Fig 9. Drain-source on-state resistance

$R_{DS(on)}$=f(T_j); I_D=150A; V_{GS}=10V

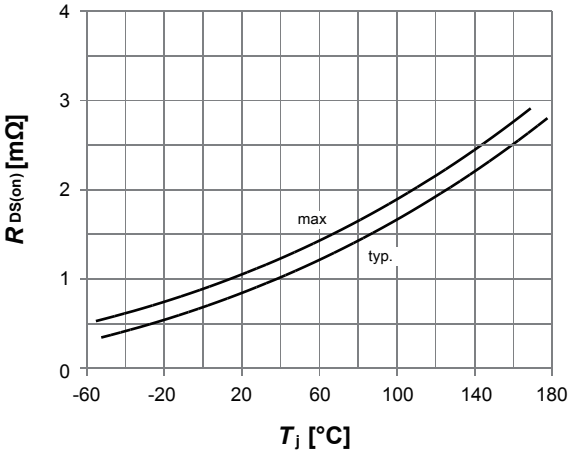


Fig 10. Typ. gate threshold voltage

$V_{GS(th)}$=f(T_j); V_{GS}=V_{DS};parameter: I_D

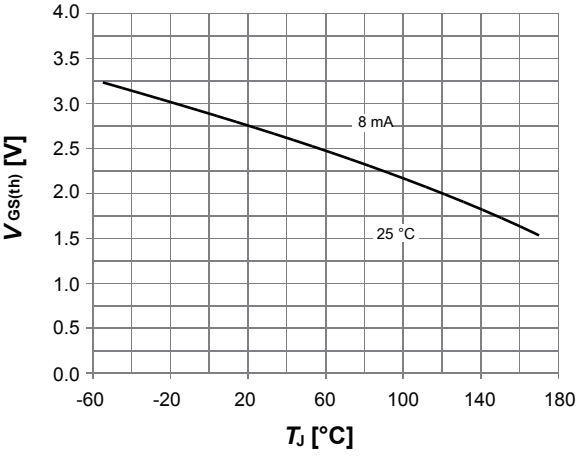


Fig 11. Typ. capacitances

C=f(V_{DS}); V_{GS}=0V; f=1MHz

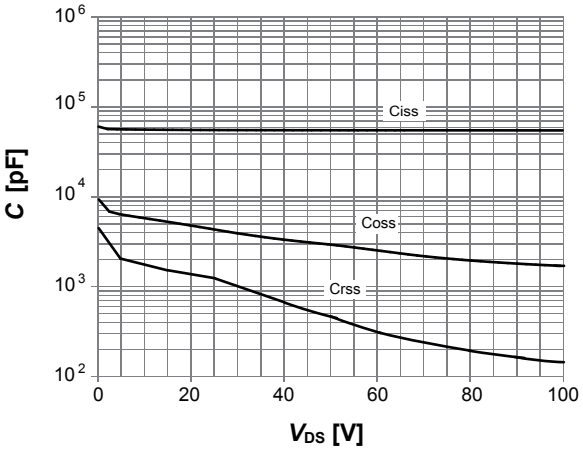
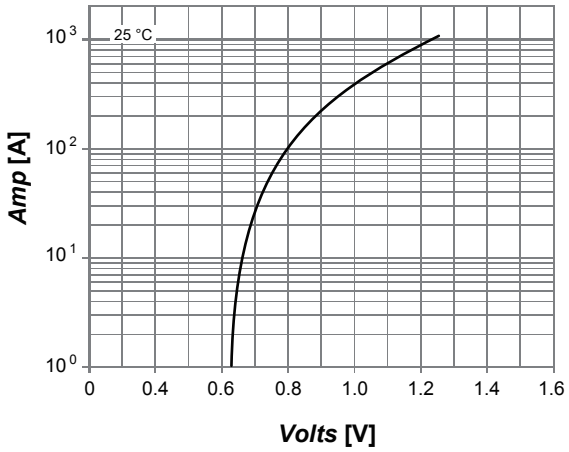


Fig 12. Typical forward characteristics of reverse diode



Typical Characteristics

Fig 13. Forward derating curve of reverse diode

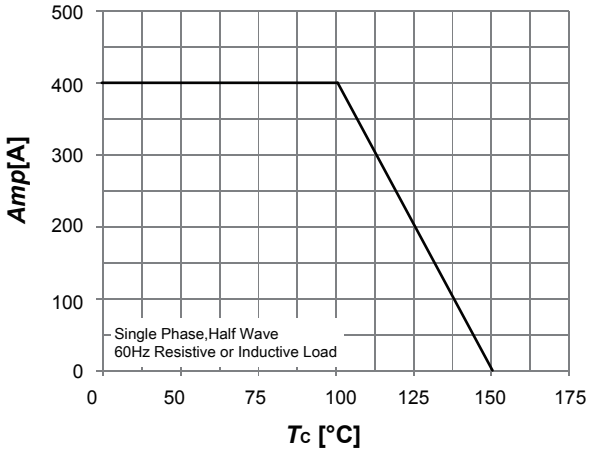


Fig 14. Peak forward surge current of reverse diode

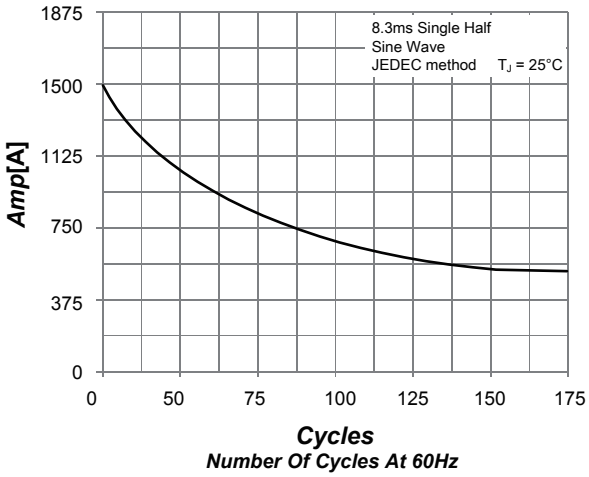


Fig 15. Typical reverse diode characteristics

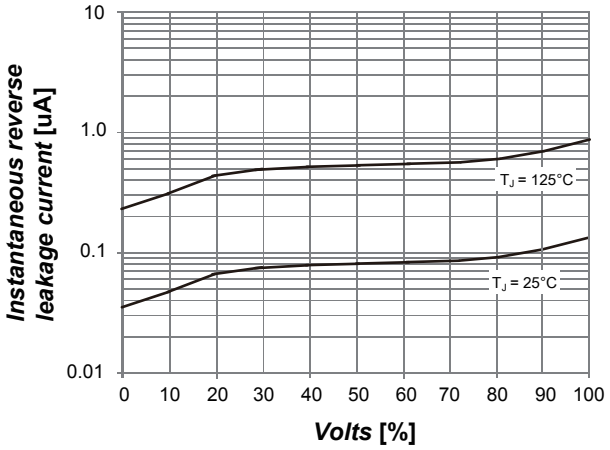


Fig 16. Typ. gate charge

V_{GS}=f(Q_{gate}); I_D=100A pulsed; parameter: V_{DD}

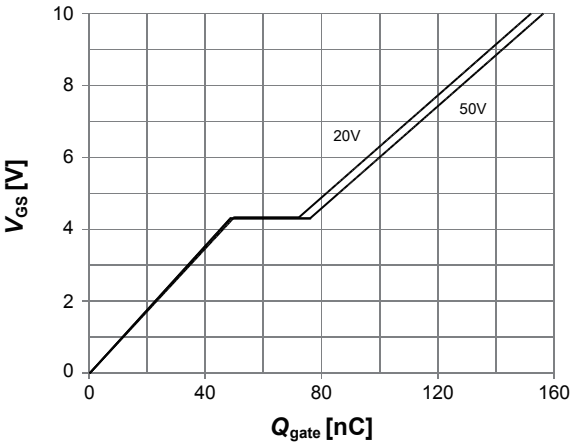
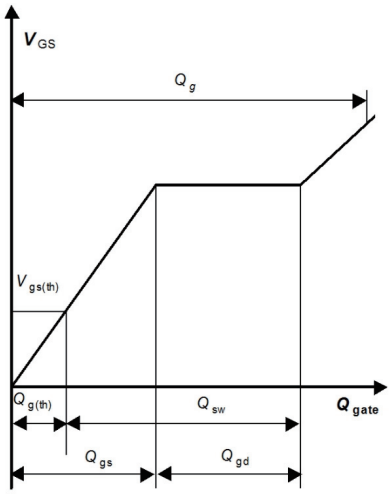


Fig 17. Gate charge waveforms



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