DAM009N090P1

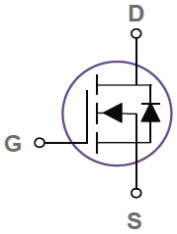
Silicon N-Channel Power MOSFET

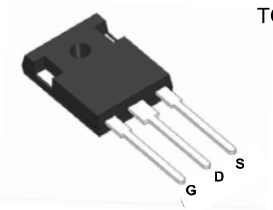
Preliminary

V_{DSS}	900V
$I_{D(@25℃)}$	9A
$R_{DS(ON)}$ max.	1.4Ω

Features

- Fast Switching
- Low On-Resistance
- Low Gate Charge Minimize Switching Loss
- Low Reverse Transfer Capacitances
- 100% Single Pulse Avalanche Energy Test

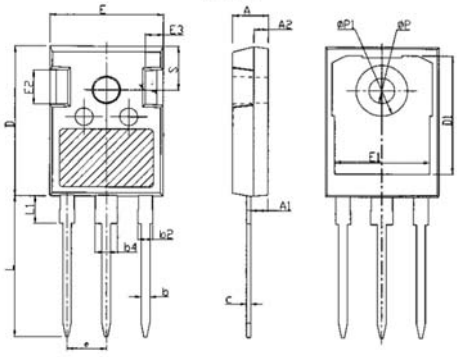




Package Dimensions

Applications

- Power Switch Circuit of Adaptor and Charger



Absolute Maximum Ratings

(Tc = 25℃ unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain Source Voltage		V_{DSS}	900	V
Gate Source Voltage		V_{GS}	± 30	V
Drain Current Continuous	@ T_C= 25°C @ T_C= 100°C	I_D	9 5.8	A
Drain Current Pulsed	Note 1	I_{DM}	36	A
Single Pulse Avalanche Energy	Note 2	E_{AS}	580	mJ
Avalanche Energy ,Repetitive	Note 1	E_{AR}	58	mJ
Avalanche Current	Note 1	I_{AR}	3.4	A
Peak Diode Recovery dv/dt @ T_C= 25°C	Note 3	dv/dt	5.0	V/ns
Power Dissipation		P_D	240	W
Storage Temperature Range		T_{STG}	-55 to +150	℃
Operating Junction Temperature Range		T_J	-55 to +150	℃
Thermal Resistance Junction to Case		$R_{\theta JC}$	typ. 0.41 max. 0.52	°C/W
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	62	°C/W

*Caution stresses greater than those in the "Absolute Maximum. Ratings" may cause permanent damage to the device.

Note : 1. Repetitive rating pulse width limited by maximum junction temperature
2. L= 10mH, I_D = 10.8A, Start T_J =25℃
3. I_{SD} = 9A, di/dt ≤ 100A/us, V_{DD} ≤ BV_{DS}, Start T_J =25℃

UNIT:mm			
Symbol	Min.	Nom	Max.
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e		5.44BSC	
L	19.62	19.92	20.22
L1	-	-	4.30
ØP	3.40	3.60	3.80
ØP1	-	-	7.30
S		6.15BSC	

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V，I_D =0.25mA	900	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{GS}=0V，V_{DS}=900V，Ta =25°C	-	-	1	μA
Gate To Source Leakage Current	I_{GSS}	V_{GS}=±30V，V_{DS}=0V	-	-	±100	nA
ON Characteristics (Pulse Width < 380μs, Duty Cycle < 2%.)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}，I_D =0.25mA	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V，I_D =4.5A	-	-	1.4	Ω
Forward Transconductance	g_{fs}	V_{DS} =30V，I_D =4.5A	-	9.2	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V	-	2593	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	146	-	
Reverse Transfer Capacitance	C_{rss}	Freq.=1MHz	-	30	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=450V	-	35	-	ns
Rise Time	t_r	V_{GS}=10V	-	41	-	
Turn-Off Delay Time	$t_{d(off)}$	I_D =9A	-	134	-	
Fall Time	t_f	R_G =12Ω	-	45	-	
Total Gate Charge	Q_g	V_{DS}=400V	-	49	-	nC
Gate to Source Charge	Q_{gs}	V_{GS}=10V	-	13	-	
Gate to Drain Charge	Q_{gd}	I_{DS}=9A	-	17	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V，I_S=9A	-	-	1.5	V
Continuous Source Current (Body Diode)	I_{SD}		-	-	9	A
Max. Pulsed Current (Body Diode)	I_{SM}		-	-	36	A
Reverse Recovery Time	T_{rr}	V_{GS}=0V I_S=9A，T_J=25°C di_F/dt=100A/μs	-	562	-	ns
Reverse Recovery Charge	Q_{rr}		-	3.5	-	μC

Typical Performance Characteristics

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

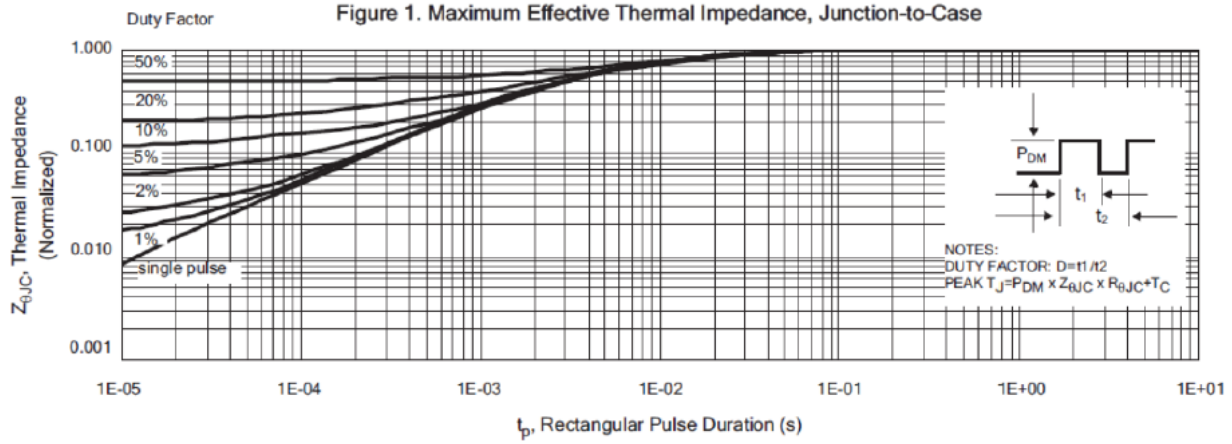


Figure 2. Maximum Power Dissipation vs Case Temperature

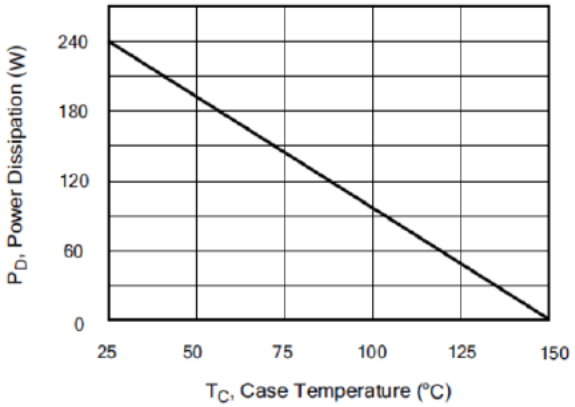


Figure3. Maximum Continuous Drain Current vs Case Temperature

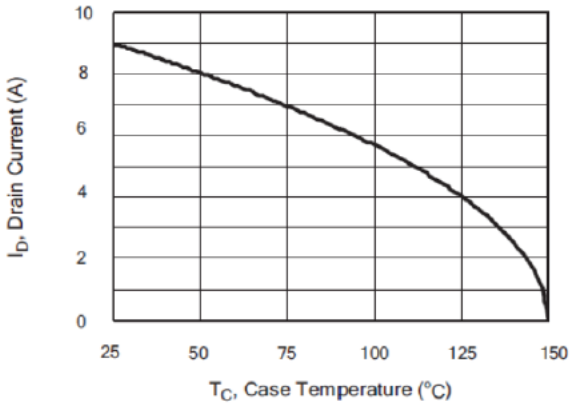


Figure 4. Typical Output Characteristics

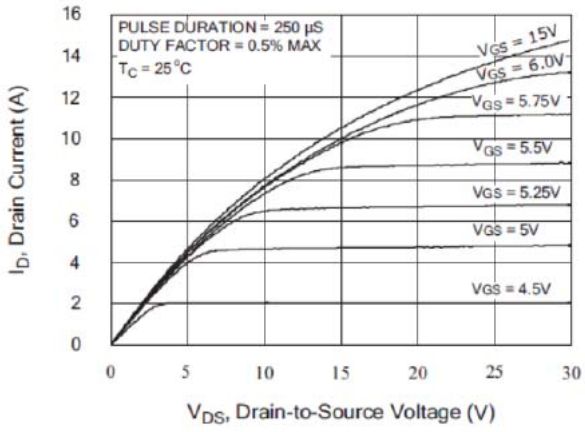
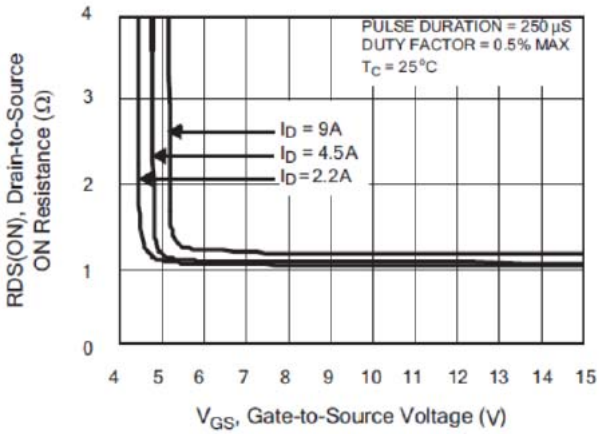


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



Typical Performance Characteristics

Figure 6. Maximum Peak Current Capability

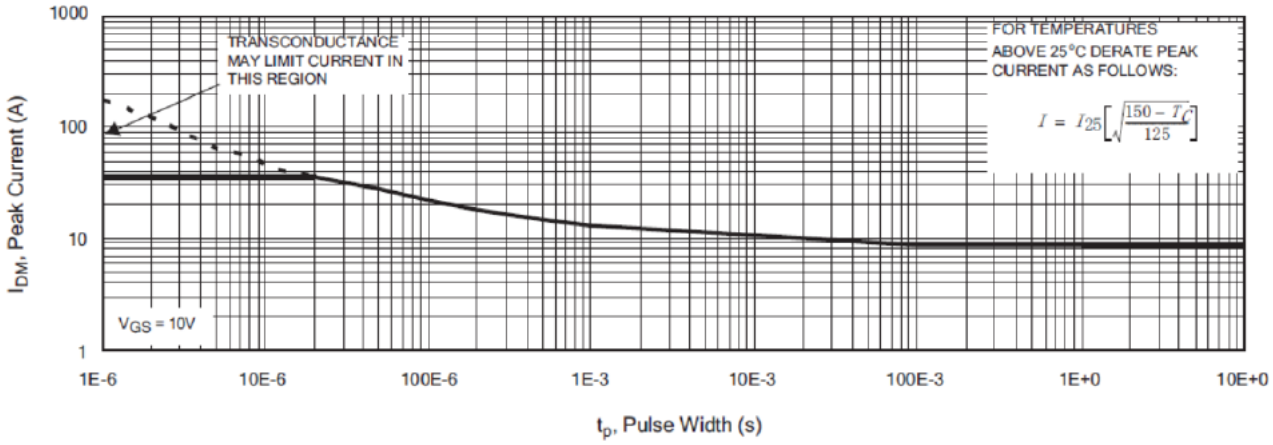


Figure 7. Typical Transfer Characteristics

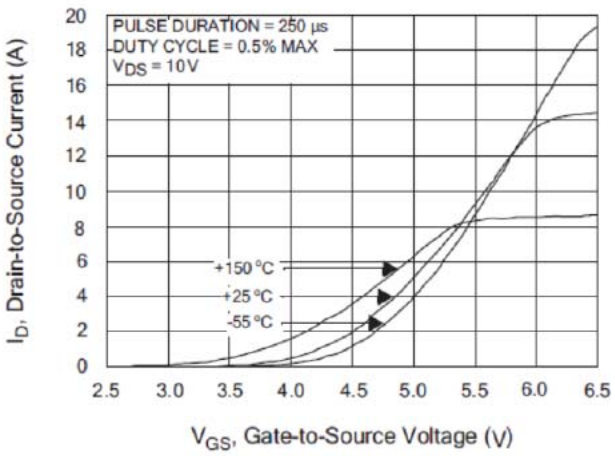


Figure8. Unclamped Inductive Switching Capability

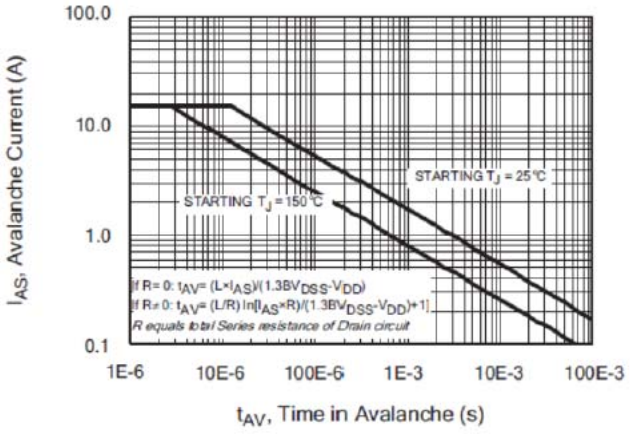


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

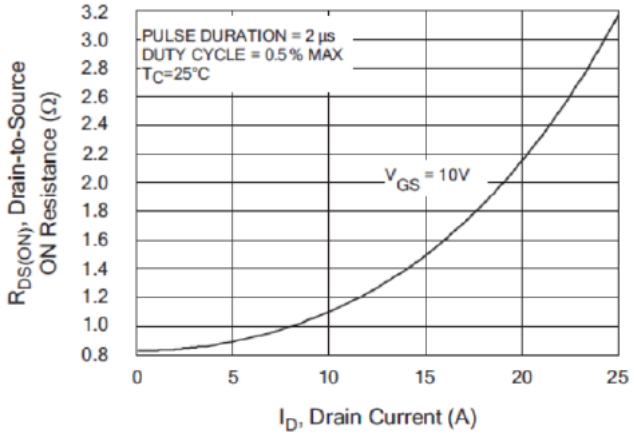
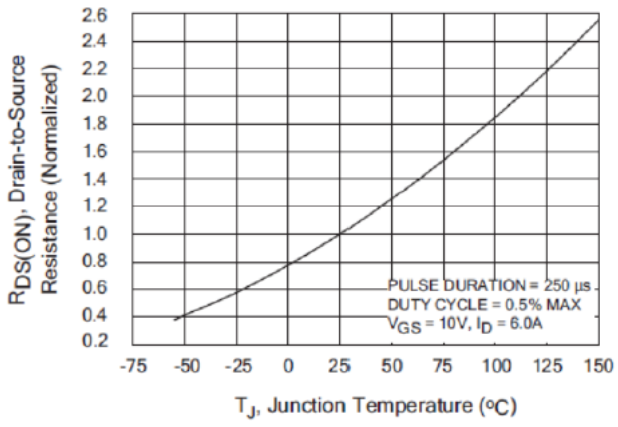


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature



Typical Performance Characteristics

Figure 11. Typical Breakdown Voltage vs Junction Temperature

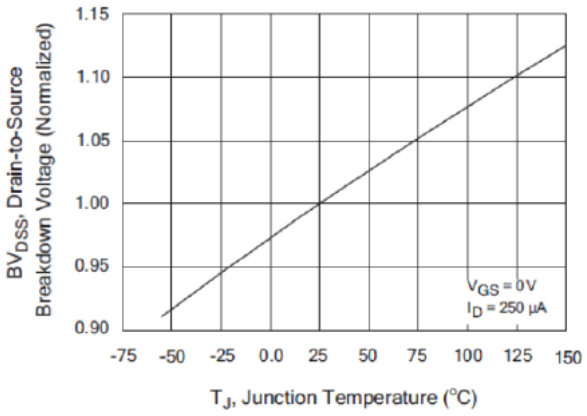


Figure 12. Typical Threshold Voltage vs Junction Temperature

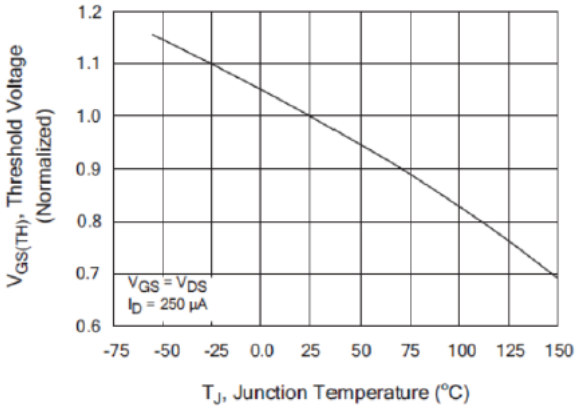


Figure 13. Maximum Forward Bias Safe Operating Area

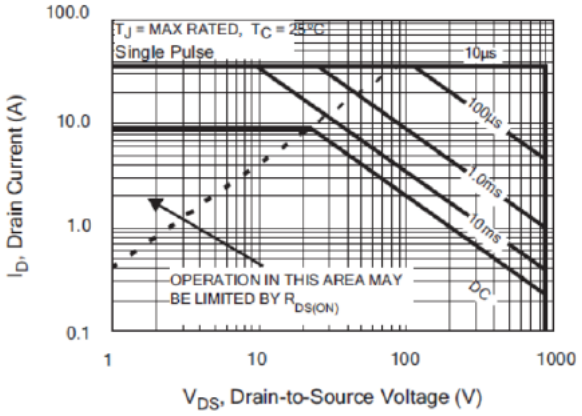


Figure 14. Typical Capacitance vs Drain-to-SourceVoltage

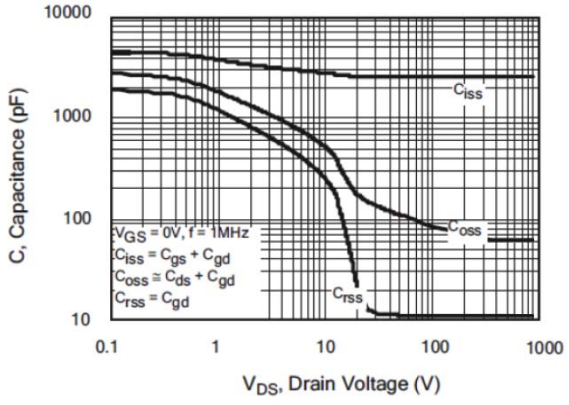


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

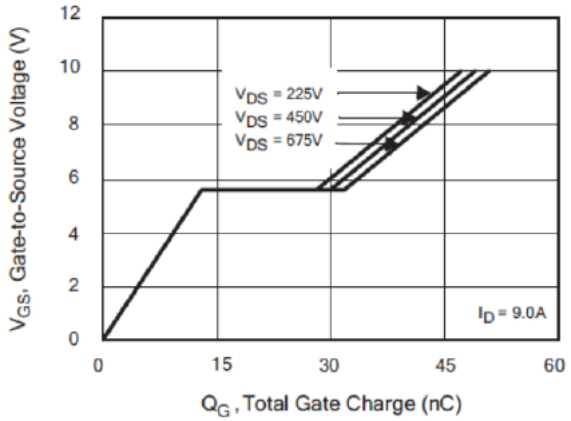
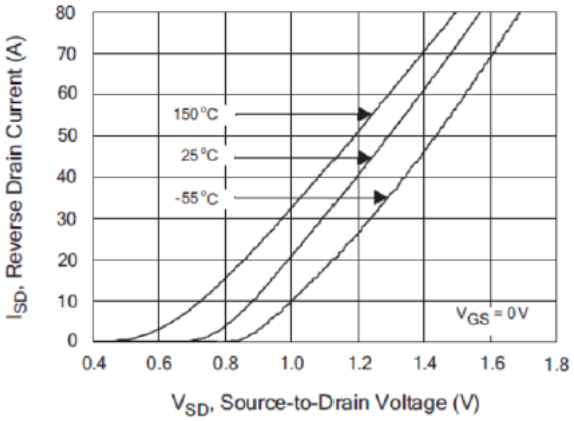


Figure 16. Typical Body Diode Transfer Characteristics



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