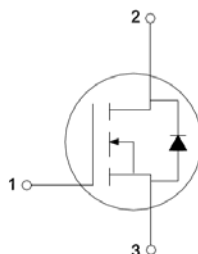


FEATURES

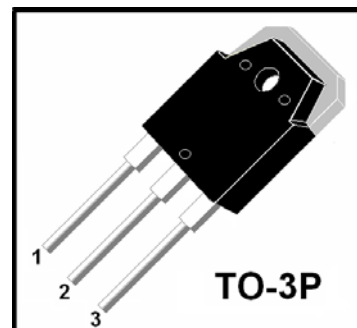
- ☐ Low drain-source ON resistance
- ☐ High forward transfer admittance
- ☐ Repetitive avalanche ratings
- ☐ Simple drive requirements
- ☐ Ease of paralleling

APPLICATIONS

- ☐ Switching power supplies
- ☐ Motor controls
- ☐ Inverters and choppers
- ☐ Audio amplifiers and energy pulse circuits



1.GATE
2.DRAIN
3.SOURCE



ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
V_{DS}	Drain - Source Voltage	$T_J=25^{\circ}\text{C}$	900	V
V_{GS}	Gate - Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$	12	A
		$T_C=100^{\circ}\text{C}$	9	A
I_{DM}	Pulsed Drain Current	Limited by T_{jmax}	36	A
P_D	Maximum Power Dissipation		140	W
E_{AS}	Single Pulse Avalanche Energy		650	mJ
I_{AR}	Avalanche Current		12	A
E_{AR}	Repetitive Avalanche Energy		20	mJ
T_J	Operating Junction		150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range		-55~150	$^{\circ}\text{C}$
Weight			12	g

THERMAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
$R_{th(ch-c)}$	Thermal resistance,channel to case		0.9	$^{\circ}\text{C/W}$
$R_{th(ch-a)}$	Thermal resistance,channel to ambient		40	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS $T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA		900			V
R _{DS(ON)}	Drain-Source ON Resistance	V _{GS} =10V, I _D =4A			0.85		Ω
		V _{GS} =10V, I _D =9A			0.95		Ω
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D =250μA		2.5	3.5	4.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =± 20V		-200		200	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =900V,V _{GS} =0V				100	μA
Q _g	Total Gate Charge	V _{DD} =400V, I _D =9A , V _{GS} =10V			93		nC
Q _{gs}	Gate-Source Charge				28		nC
Q _{gd}	Gate-Drain Charge				30		nC
g _{fs}	Forward Transconductance	V _{DS} =50V, I _D =4A			8		S
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f =1MHz			3900		pF
C _{oss}	Output Capacitance				780		pF
C _{rss}	Reverse Transfer Capacitance				210		pF
t _{d(on)}	Turn - on Delay Time	V _{DD} =400V,I _D =9A, R _G =10 Ω , V _{GS} =10V, R _L =44 Ω	T _J =25°C		36		ns
			T _J =125°C		36		ns
t _r	Rise Time		T _J =25°C		30		ns
			T _J =125°C		33		ns
t _{d(off)}	Turn - off Delay Time		T _J =25°C		97		ns
			T _J =125°C		102		ns
t _f	Fall Time		T _J =25°C		32		ns
			T _J =125°C		40		ns

Source-Drain RATINGS AND CHARACTERISTICS $T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD}	Continuous Source-Drain Current				9	A
I_{SDM}	Pulse Source-Drain Current				36	A
V_{SD}	Source-Drain Voltage	$I_{SD}=9A, V_{GS}=0V, T_j=25^{\circ}\text{C}$		0.82	1.6	V
t_{rr}	Reverse Recovery Time	$I_{SD}=9A, di_{SD}/dt=-100A/\mu s$ $T_j=25^{\circ}\text{C}$		850		ns
I_{RRM}	Max. Reverse Recovery Current			20		A
Q_{RRM}	Max. Reverse Recovery Charge			9.3		μC

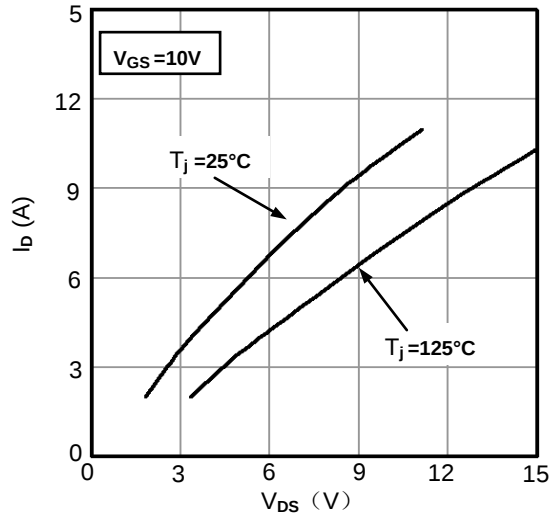


Figure1. Typical Output Characteristics

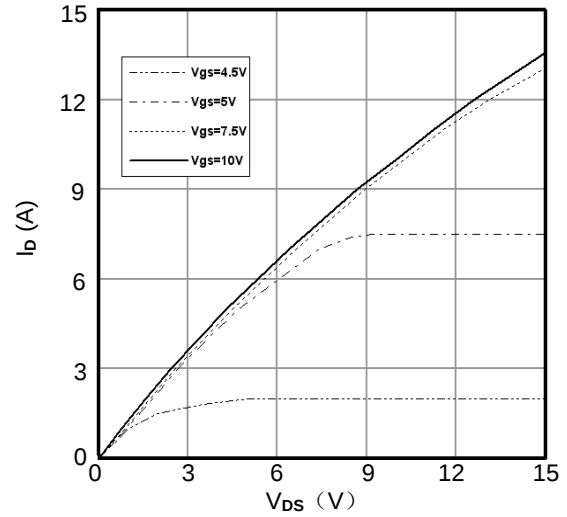


Figure2. Typical Output Characteristics

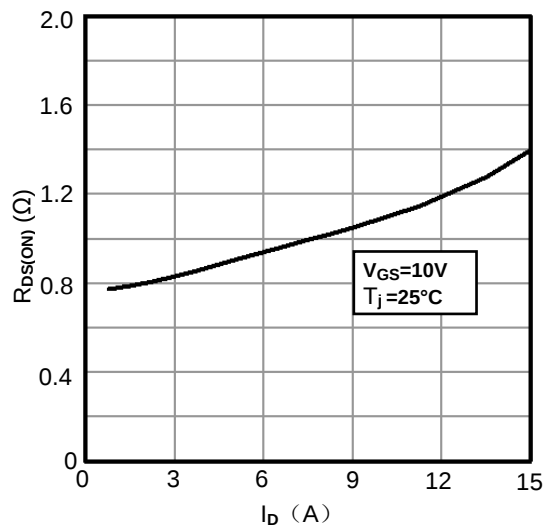


Figure3. Drain-Source ON Resistance vs. I_D

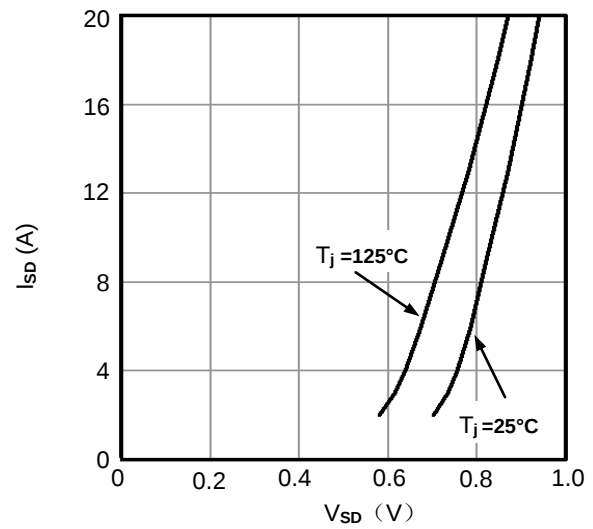


Figure4. Source-Drain Voltage

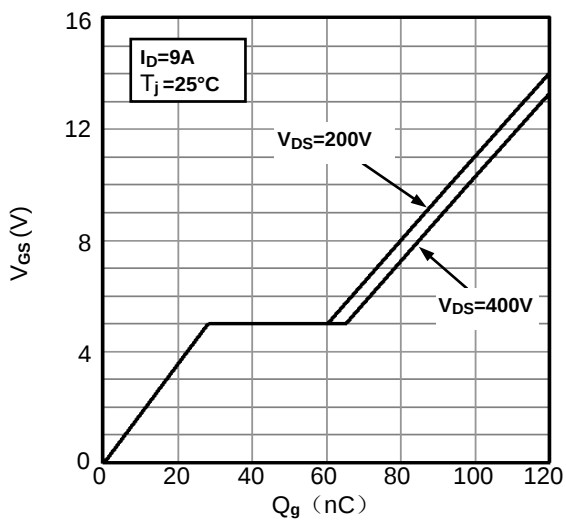


Figure5. Gate Charge characteristics

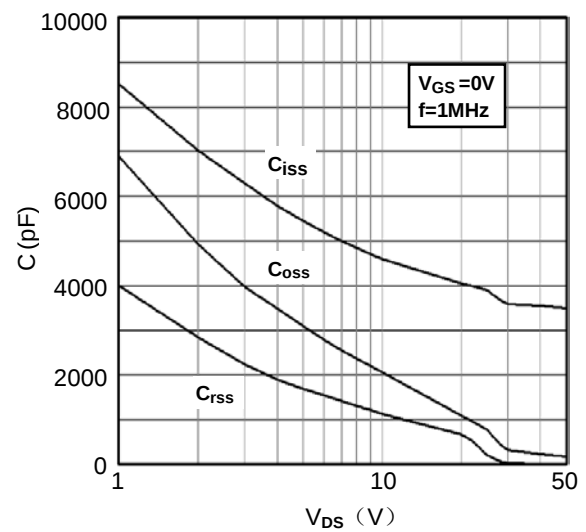


Figure6. Typical Capacitances vs. V_{DS}

MM9N090P

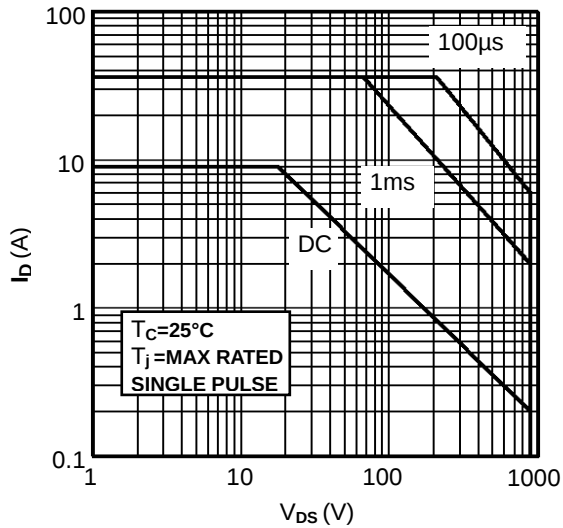


Figure7. Forward Bias Safe Operating Area

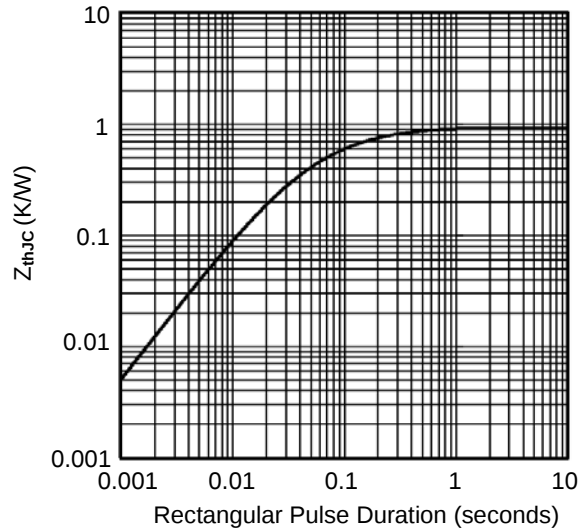


Figure8. Transient Thermal Impedance

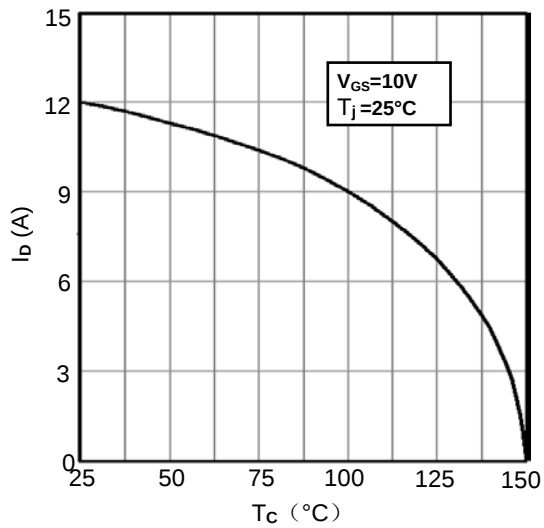


Figure9. Maximum Continuous Drain Current vs. Case Temperature

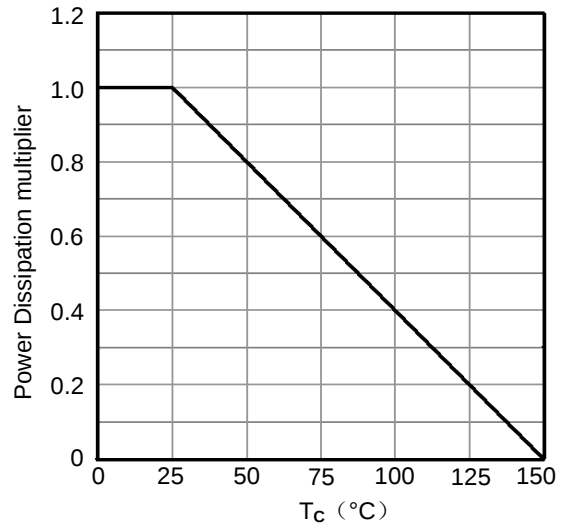


Figure10. Normalized Power Dissipation vs. Case Temperature

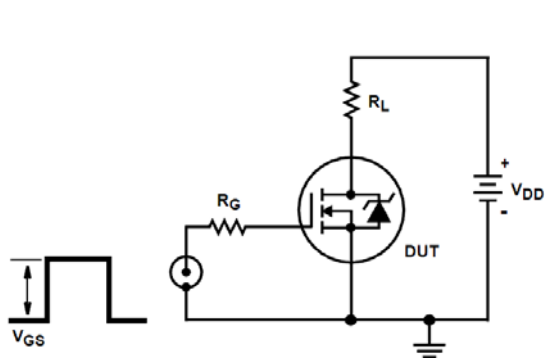


Figure11. Switching Time Test Circuit

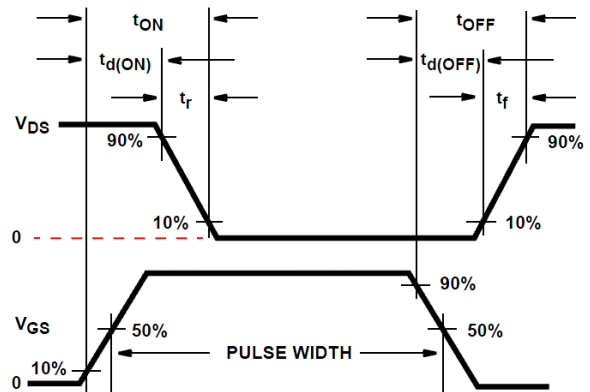


Figure12. Resistive Switching Waveforms

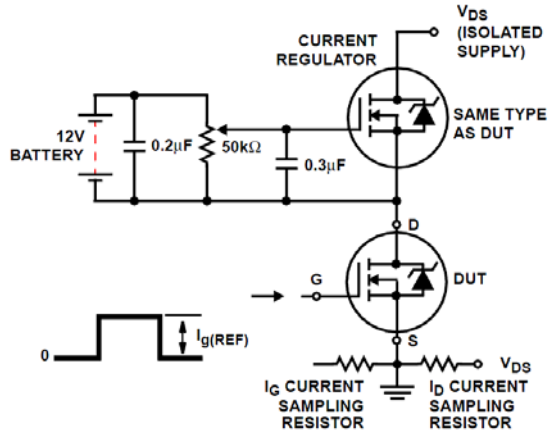


Figure13. Gate Charge Test Circuit

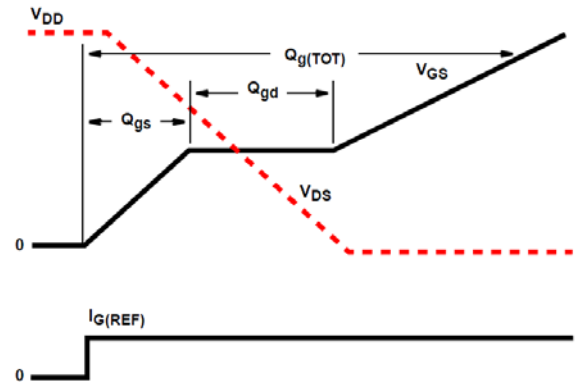
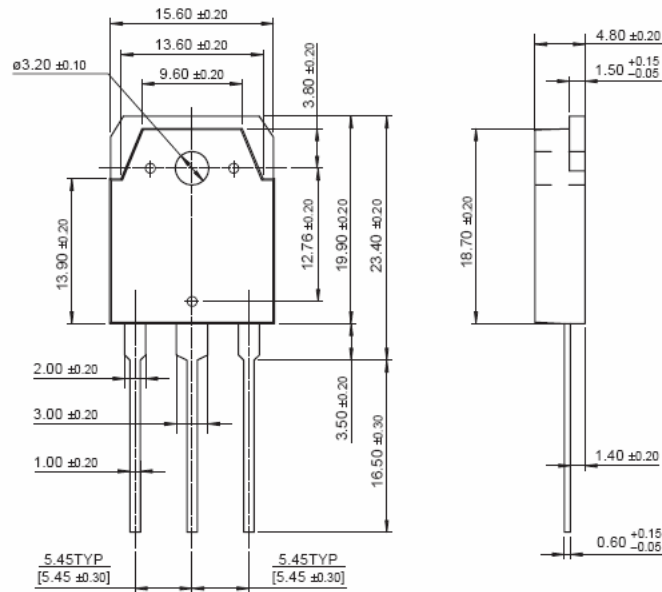


Figure14. Gate Charge Waveforms



Dimensions (mm)
Figure15. Package Outline