CRXMH37P075NMG1AQ

SiC MOSFET 750V, 60mΩ, 37A

Features

- Qualified according to AEC Q101
- CRM G1 SIC MOSFET Technology
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Avalanche Ruggedness
- Fast Reverse Recovery

Product Summary

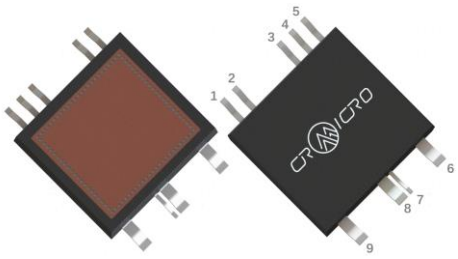
VDS	750V
$R_{DS(on)_typ}$	60mΩ
I_D	37A

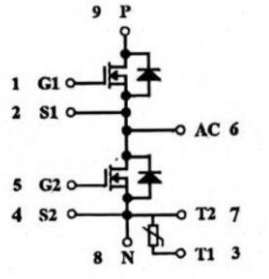
Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- On Board Charger

100% Avalanche Tested

RoHS HF





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Qty
CRXMH37P075NMG1AQ	CRXMH37P075NMG1AQ	MSOP9	Reel	200pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DSmax}	750	V
Continuous drain current V_{GS}=20V，T_C = 25°C V_{GS}=20V，T_C = 100°C	I_D	 37 26	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D(pulse)}$	93	A
Avalanche energy, single pulse (L=10mH, Rg=25Ω)	E_{AS}	590	mJ
Gate-Source voltage (dynamic)	V_{GSmax}	-10/+22	V
Gate-Source voltage (static)	V_{GSop}	-5/+20	V
Power dissipation (T_C=25°C,T_J=175°C)	P_D	130	W
Operating junction temperature	T_j	-55…175	°C
Storage temperature	T_{stg}	-55…150	°C

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Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case. Max	R_{thJC}	1.25	°C/W
Thermal resistance, junction – ambient. Max	R_{thJA}	35	

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	$V_{(BR)DSS}$	750	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS},I_D=5mA
Zero gate voltage drain current	I_{DSS}	-	2	100	μA	VDS=750V,VGS=0V T_j=25°C
		-	20	-		T_j=175°C
Gate-source leakage current	I_{GSS}	-	-	250	nA	V_{GS}=20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	60	-	mΩ	VGS=18V, ID=13.2A
		-	52	70	mΩ	V_{GS}=20V, ID=13.2A, T_j=25°C
		-	77	-		T_j=175°C
Transconductance	g_{fs}	-	7.4	-	S	V_{DS}=20V,I_{DS}=13.2A
Dynamic Characteristic						
Internal Gate resistance	$R_{G(int)}$	-	3.4	-	Ω	f=1MHz
Input Capacitance	C_{iss}	-	1190	-	pF	V_{GS}=0V, V_{DS}=650V, f=1MHz
Output Capacitance	C_{oss}	-	129	-		
Reverse Transfer Capacitance	C_{rss}	-	13	-		
Coss Stored Energy	E_{oss}	-	29	-	uJ	VDS=650V
Gate Total Charge	Q_g	-	68	-	nC	VGS=-5/20V VDS=400V ID=13.2A
Gate-Source charge	Q_{gs}	-	16	-		
Gate-Drain charge	Q_{gd}	-	17	-		
Turn-on delay time	$t_{d(on)}$	-	16	-	ns	VDD=400V,ID=13.2A VGS=-5V/20V, RG=10Ω，L=100uH
Rise time	t_r	-	21	-		
Turn-off delay time	$t_{d(off)}$	-	38	-		
Fall time	t_f	-	13	-		
Turn-On Switching Energy	$E_{(on)}$	-	134	-	uJ	
Turn Off Switching Energy	$E_{(off)}$	-	8.7	-		

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Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	3.3	-	V	V_{GS}=0V,I_F=6.6A
		-	2.6	-	V	V_{GS}=0V,I_F=6.6A, T_j=175℃
Body Diode Reverse Recovery Time	t_{rr}	-	14	-	ns	di/dt=1860A/us IF=13.2A Vdd=400V
Body Diode Reverse Recovery Charge	Q_{rr}	-	72	-	nC	
Body Diode Peak Reverse Recovery Current	I_{rrm}	-	8.7	-	A	

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Typical Performance Characteristics

Fig 1. Output Characteristics (Tj=-55℃)

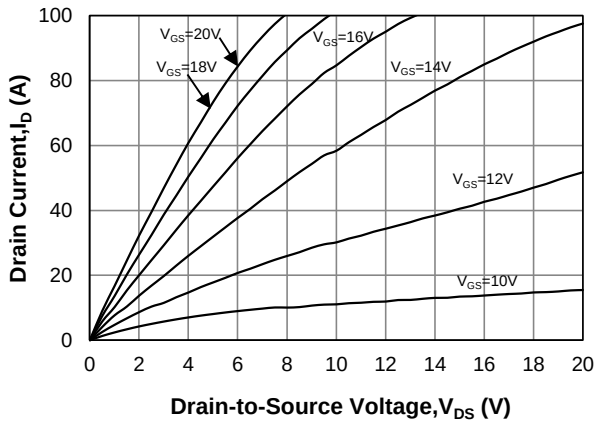


Fig 2. Output Characteristics (Tj=25℃)

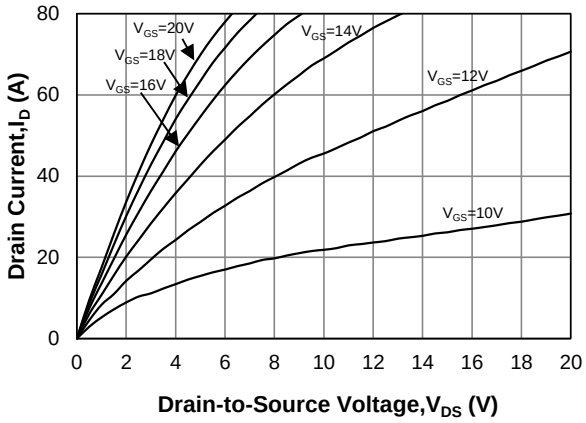


Fig 3. Output Characteristics (Tj=175℃)

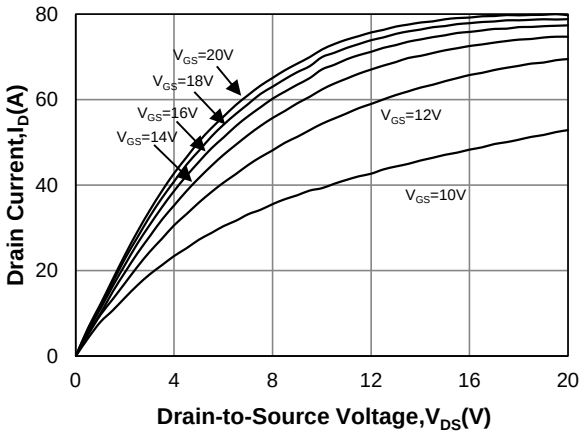


Fig 4: Rds(on) vs. Temperature

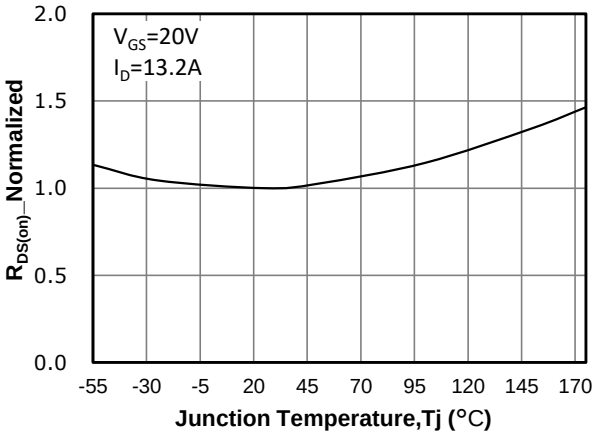


Fig 5: On-Resistance vs. Drain Current For Various Temperatures

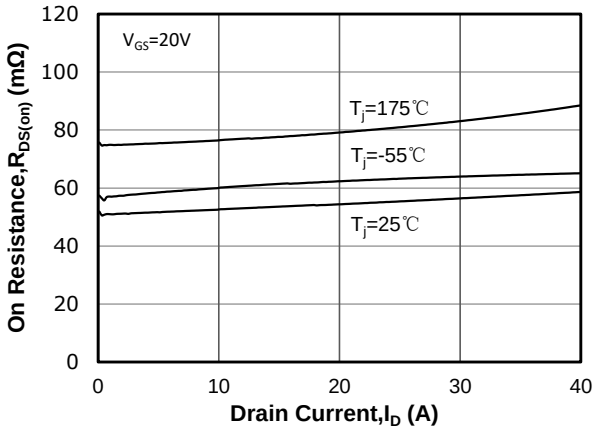
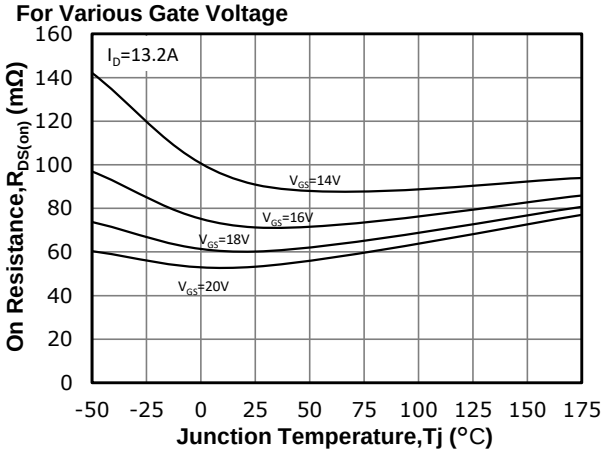


Fig 6: Rds(on) vs. Temperature For Various Gate Voltage



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Fig 7: Transfer Characteristics

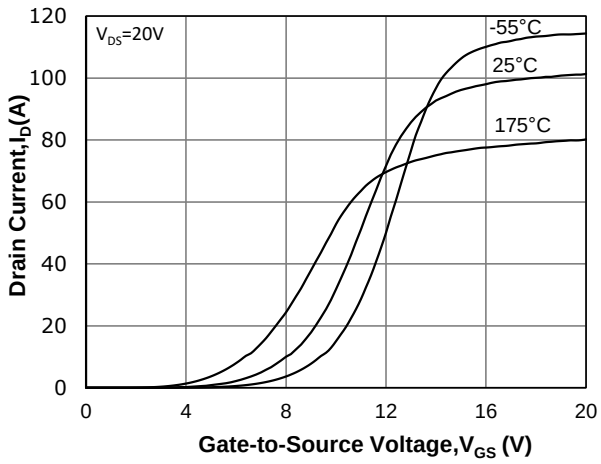


Fig 8: Body-diode Forward Characteristics For Various Temperatures

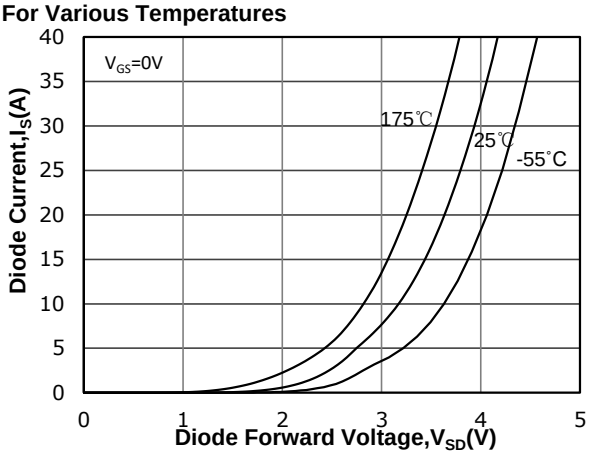


Fig 9: VGS(th) Vs Tj Characteristics

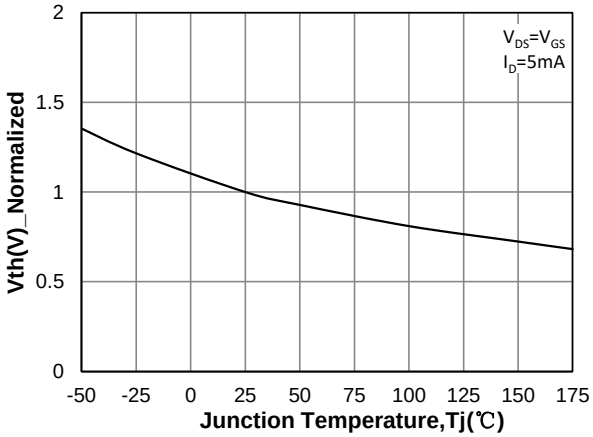


Fig 10: 3rd Quadrant Characteristic at 25℃

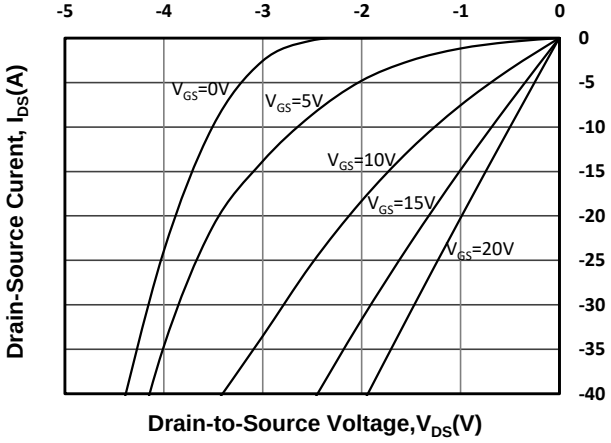


Fig 11：Gtate Charge Characteristics

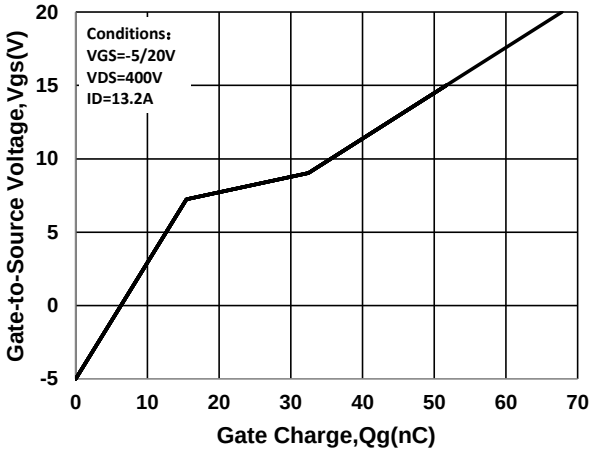
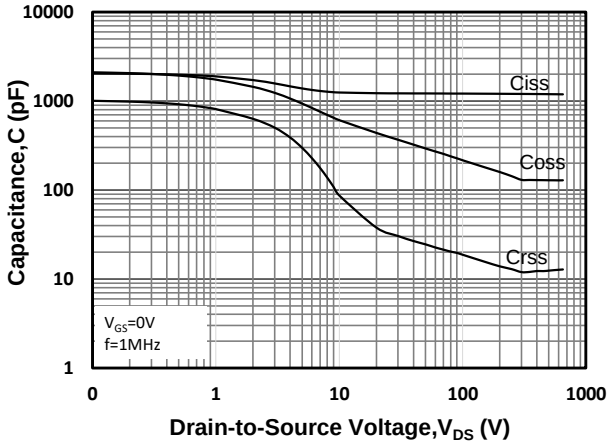


Fig 12: Capacitance Characteristics



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Fig 13: Continuous Drain Current vs. Case Temperature

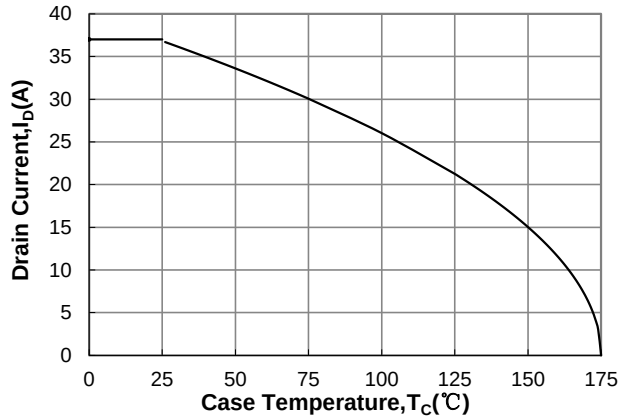


Fig 14: Maximum Power Dissipation vs. Case Temperature

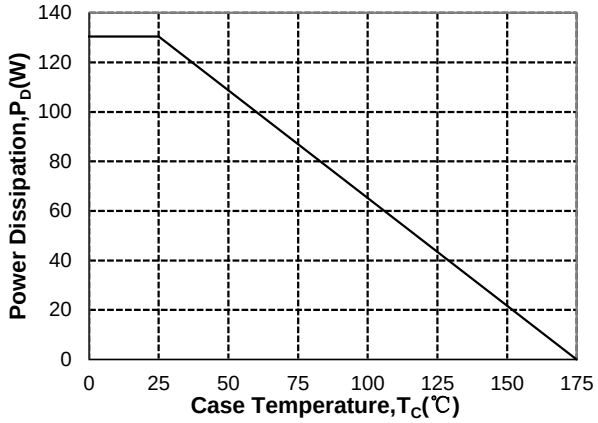


Fig 15: Safe Operating Area

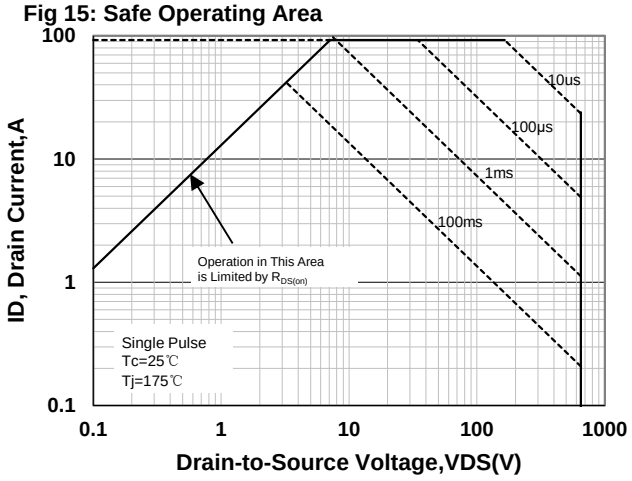


Fig 16:Output Capacitor Stored Energy

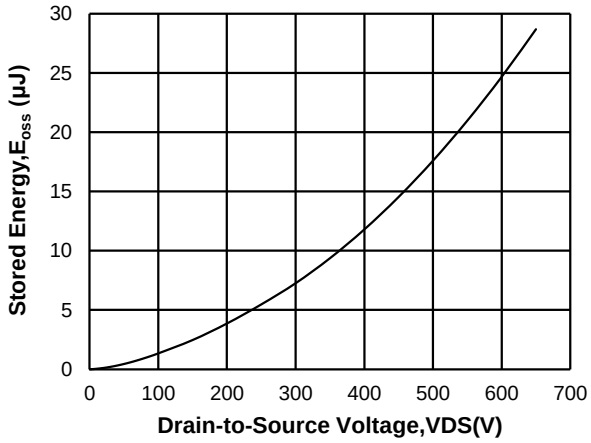
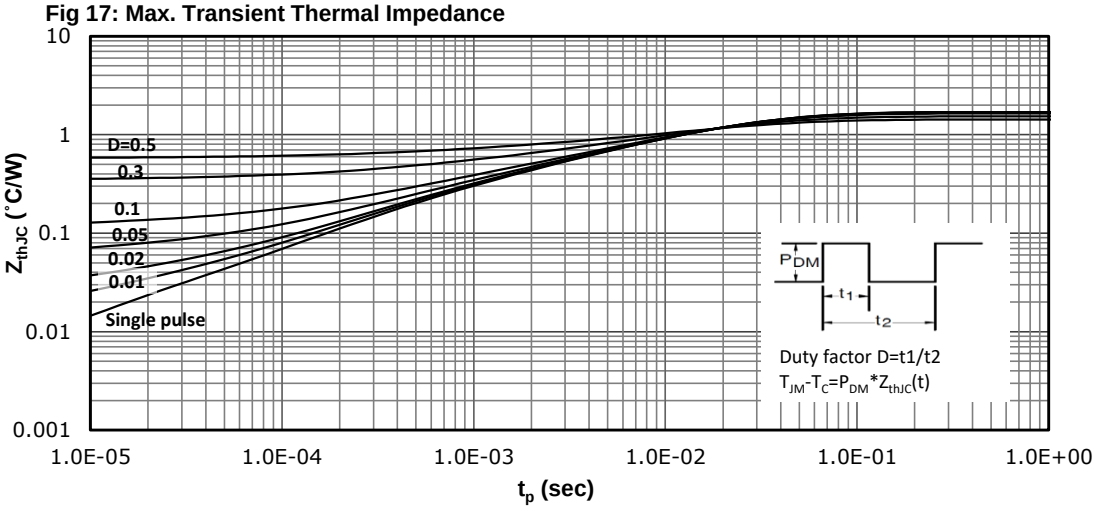
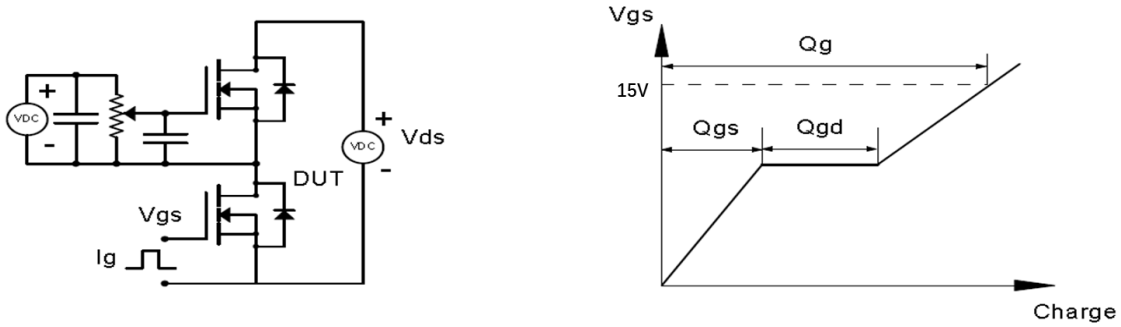


Fig 17: Max. Transient Thermal Impedance

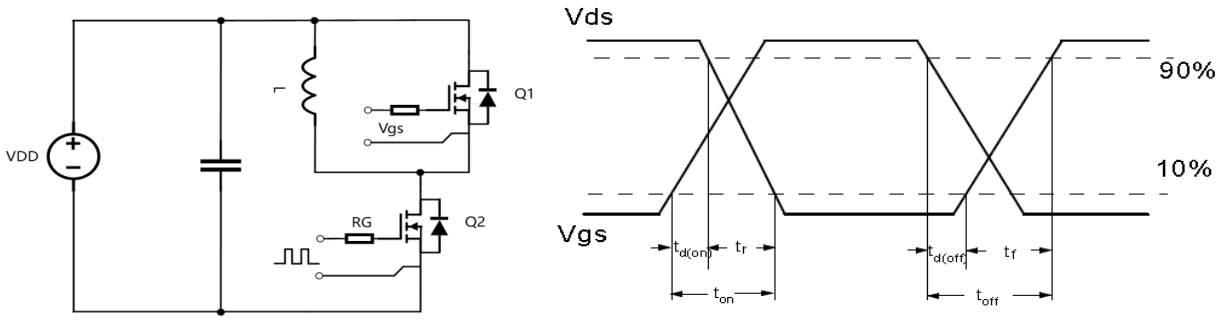


Test Circuit & Waveform

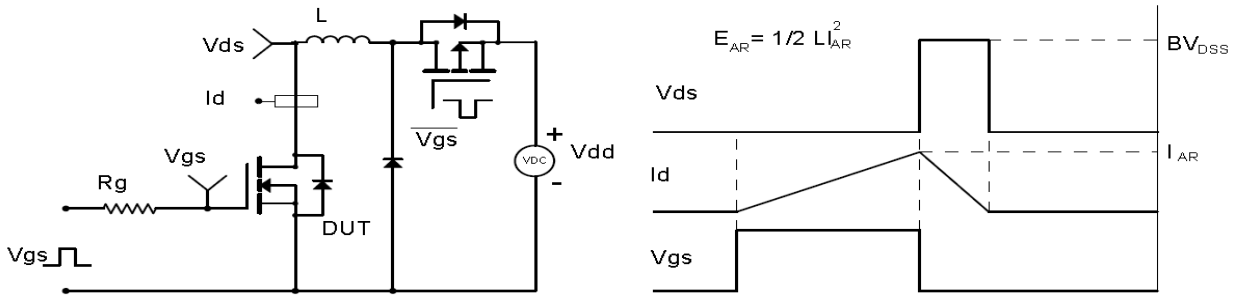
Gate Charge Test Circuit & Waveform



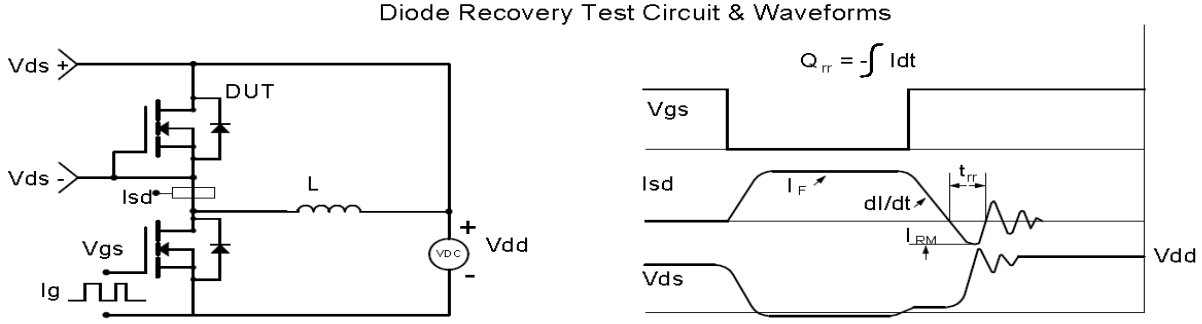
Resistive Switching Test Circuit & Waveforms



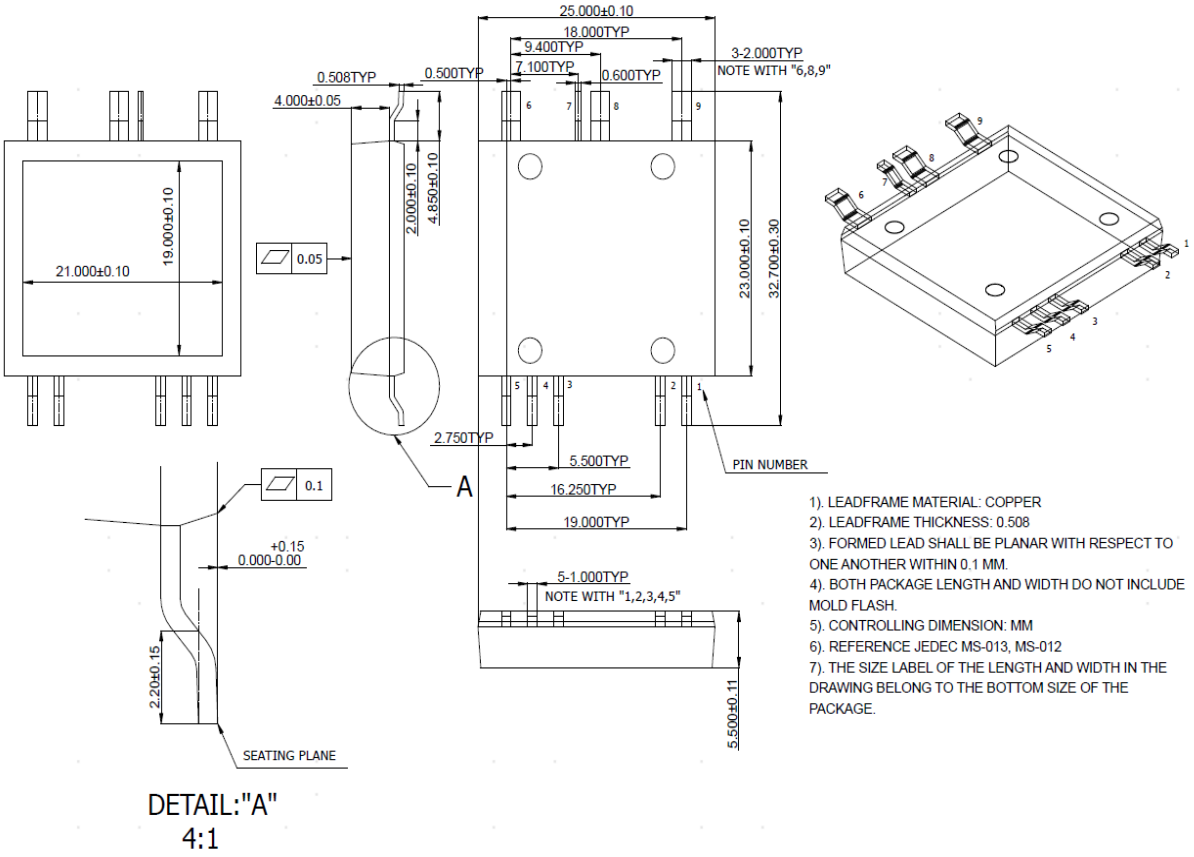
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: MSOP9



DETAIL:"A"
4:1

Revision History

Revison	Date	Major changes
1.0	2025/5/7	Release of formal version

Disclaimer

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