SPECIFICATION SHEET

N-CHANNEL ENHANCEMENT MODE MOSFET CASE TO-252

SPECIFICATION SHEET NO.	S0212- MDDG10R08D00SD	
ORIGINAL MFG/PART NO.	MDD Diodes/MDDG10R08D	
NEXTGEN PART CODE	MDDG10R08D00SD	Indicate This Code For RFQ/Order
DATE	Feb. 12, 2025	
REVISION	A2	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	100V N-Channel Enhancement Mode MOSFET, MDDG10 Series, 3 pins, MDDG10R08D Type, Case TO-252 Drain-Source Voltage (V_{BRDSS}):100V Continuous Drain Current (I_D): 70A Max. Power Dissipation (P_D): 100W Max. Junction Temperature (T_J): -55 ~ +150° C Package in Tape/reel, 2500pcs/Reel REACH/RoHS III/Compliant and Halogen Free (HF)	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved   
Effective Date: Feb. 12, 2025

CUSTOMER APPROVE
Date:

NextGen Components, Inc. sales@NextGenComponent.com www.NextGenComponent.com

MAIN FEATURE

- Low RDS(ON) & FOM
- Extremely Low Switching Loss
- Excellent Reliability And Uniformity
- Fast Switching And Soft Recovery
- REACH/RoHS/RoHS III/Compliant
- Halogen Free

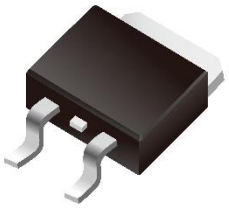


Image shown is a representation only.

Exact specifications should be obtained from the product dimension.

APPLICATION

- PD Charger
- Motor Driver
- Switching Voltage Regulator
- DC-DC Convertor
- Switched Mode Power Supply

ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 7.
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

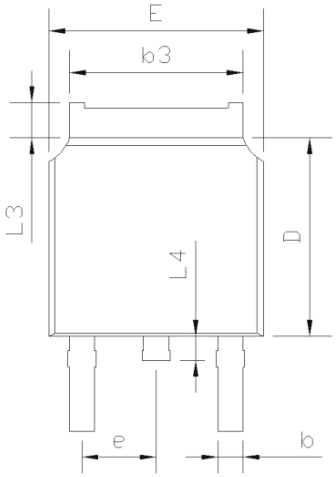
- Please Follow Up Part Code Guide And Indicate NextGen Part Code MDDG10R08D00SD For RFQ and Order.

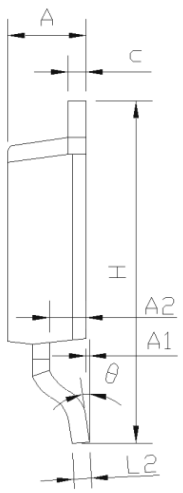
PART CODE GUIDE

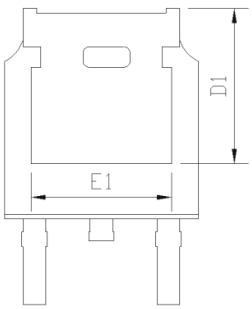
RFQ
Request For Quotation

CODE	NAME	KEY SPECIFICATION OPTION
MDDG10R	Product Series Code	MOSFET, Drain-Source Voltage (V_{DS}): 100V, MDDG10R series, 3 pins
08	Drain-Source On-State Resistance Code	08: 8mΩ@VGS=10V
D	Case Code	D: Case TO-252
00SD	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: mm, Case TO-252 Outline



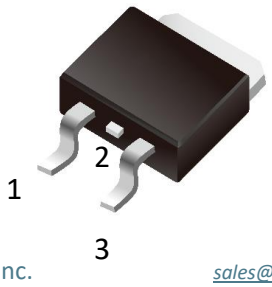


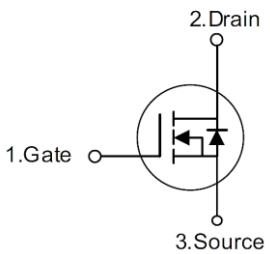


SYMBOL	VALUE (MM)		
	MIN.	TYP.	MAX.
A	2.20	2.30	2.38
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L2	0.51BSC		
L3	0.88	-	1.28
L4	0.50		1.00
θ	0°		8°

EQUIVALENT CIRCUIT

1. Gate (G) 2. Drain (D) 3. Source (S)





100V N-CHANNEL ENHANCEMENT MODE MOSFET

$V_{(BR)DSS}$	I_D Max	R_{DS} (on), Max	$Q_{g,typ}$
100V	70A	8mΩ @ V_{GS}=10V	49.9 nC

MAX. RATINGS @T_A=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOLS	VALUE	UNIT
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Note 1)	I_D	70	A
Pulsed Drain Current (Note 2)	$I_{D, pulse}$	210	A
Avalanche Energy Single Pulsed (Note 5)	E_{AS}	100	mJ
Continuous diode forward current (Note 1)	I_S	70	A
Diode pulse current (Note 2)	$I_{S, pulse}$	210	A
Power Dissipation (Note 3)	P_D	100	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.25	°C/W
Thermal Resistance Junction-Ambient (Note4)	$R_{\theta JA}$	62	°C/W
Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note:

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 ° C.
5) V_{DD}=30 V,V_{GS}=10 V, L=0.3 mH, starting Tj=25 ° C.

ELECTRICAL CHARACTERISTICS @Ta=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{DS}=0V	-	-	1	uA
Gates-Source Leakage Crurent-Forward	I_{GSS}	V_{GS}=20V	-	-	100	nA
Gates-Source Leakage Crurent-Reverse	I_{GSS}	V_{GS}=-20V	-	-	-100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	-	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A	-	7	8	mΩ
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=12A	-	8	10	mΩ

DYNAMIC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V f=100kHz		2604	-	pF
Output Capacitance	C_{oss}		-	361	-	pF
Reverse Transfer Capacitance	C_{rss}		-	6.5	-	pF
Total Gate Charge	Q_g	V_{DS}=50V, V_{GS}=10V, I_D=25A	-	49.9	-	nC
Gate Source Charge	Q_{gs}		-	6.5	-	nC
Gate Drain Charge	Q_{gd}		-	12.4	-	nC
Gate plateau voltage	$V_{plateau}$		-	3.4	-	V

SWITCHING CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Turn on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, I_D=25A, R_G=2.2Ω	-	20.6	-	ns
Turn on Rise Time	t_r		-	5	-	ns
Turn Off Delay Time	$t_{d\ (off)}$		-	51.8	-	ns
Turn Off Fall Time	t_f		-	9	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Diode Forward Voltage	V_{SD}	I_S=30A, V_{GS}=0V	-	-	1.3	V
Body Diode Reverse Recovery Time	t_{rr}	V_R=50V I_S=12A, dI/dt=100A/µs	-	60.4	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	106	-	nC
Peak reverse recovery current	I_{rrm}		-	3	-	A

TYPICAL PERFORMANCE - For Reference Only

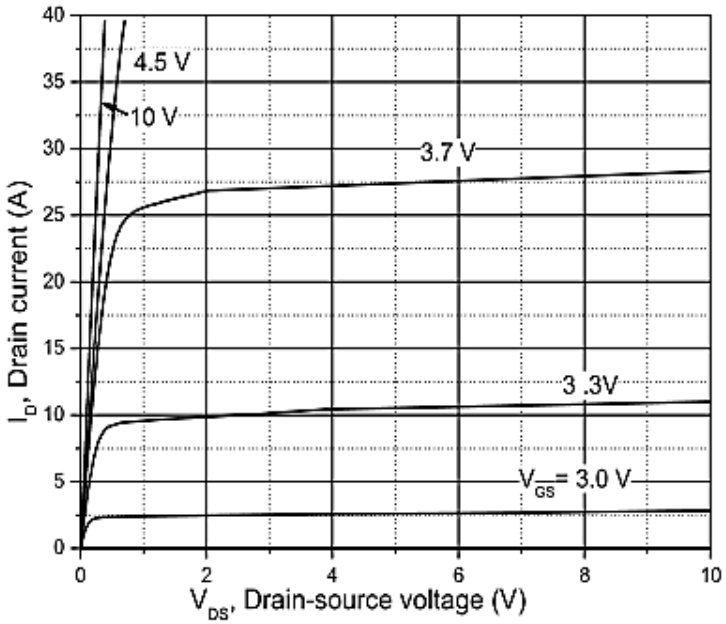


Figure 1. Typ. output characteristics

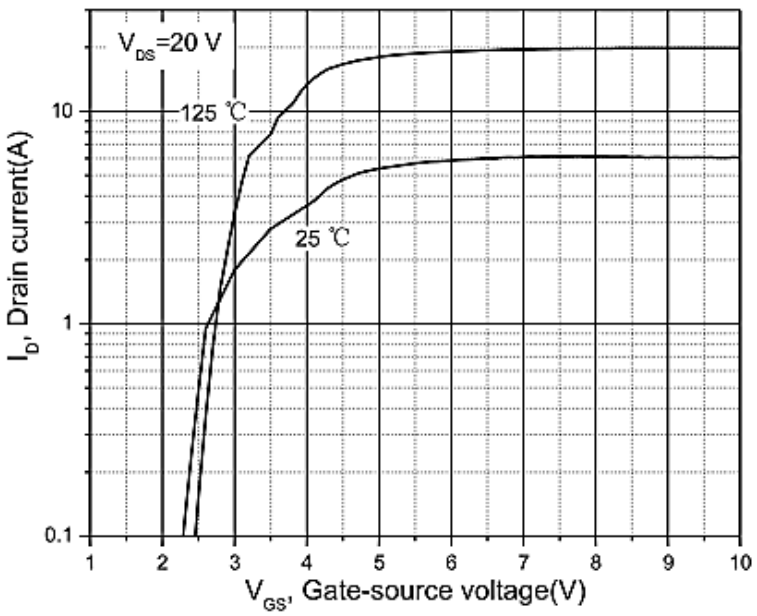


Figure 2. Typ. transfer characteristics

TYPICAL PERFORMANCE - For Reference Only

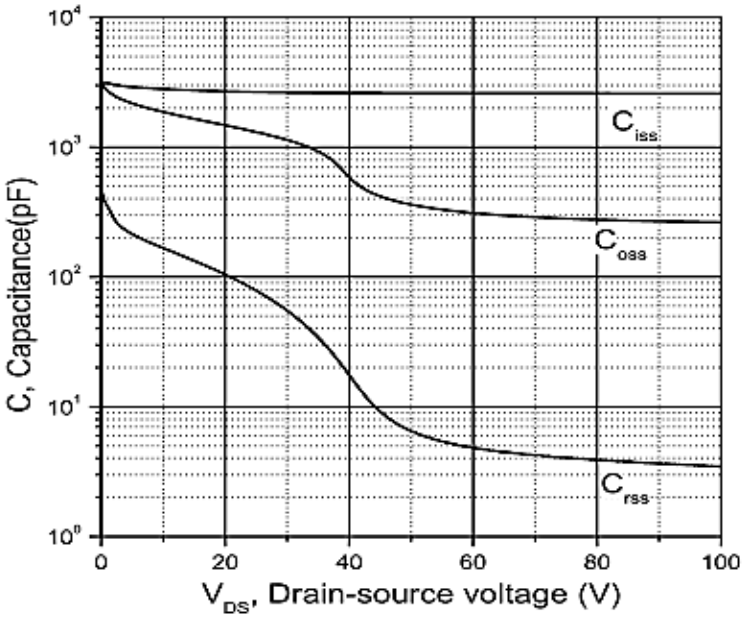


Figure 3. Typ. capacitances

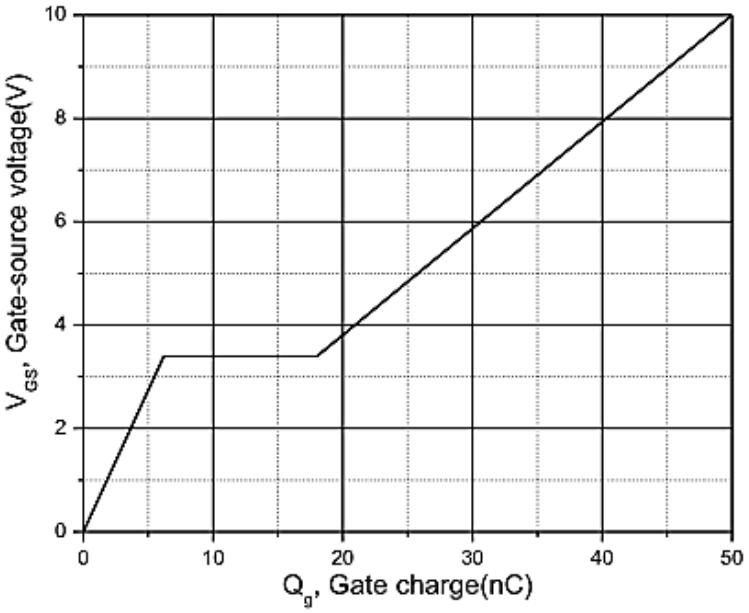


Figure 4. Typ. gate charge

TYPICAL PERFORMANCE - For Reference Only

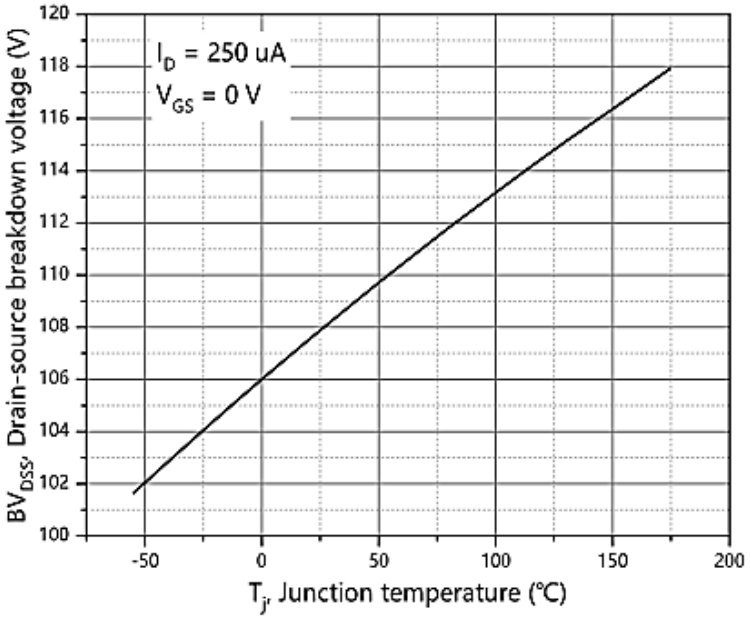


Figure 5. Drain-source breakdown voltage

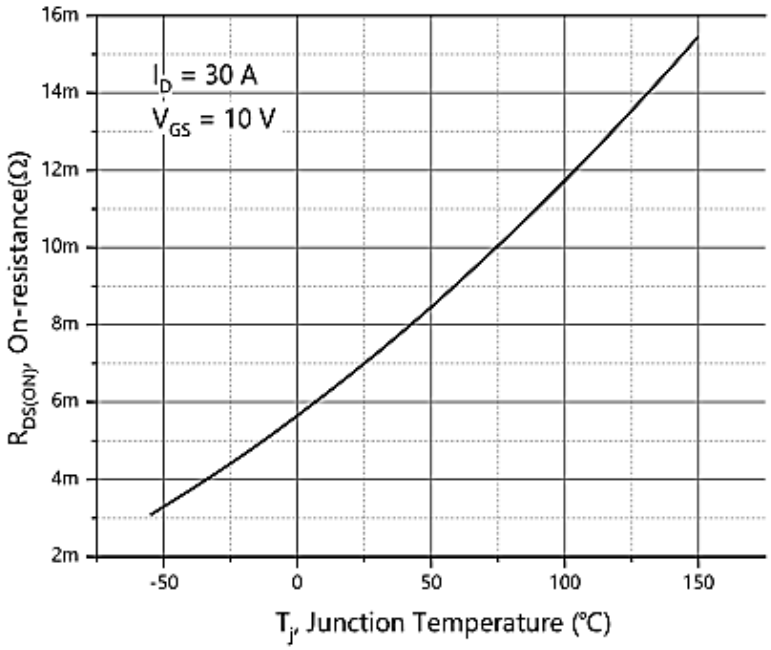


Figure 6. Drain-source on-state resistance

TYPICAL PERFORMANCE - For Reference Only

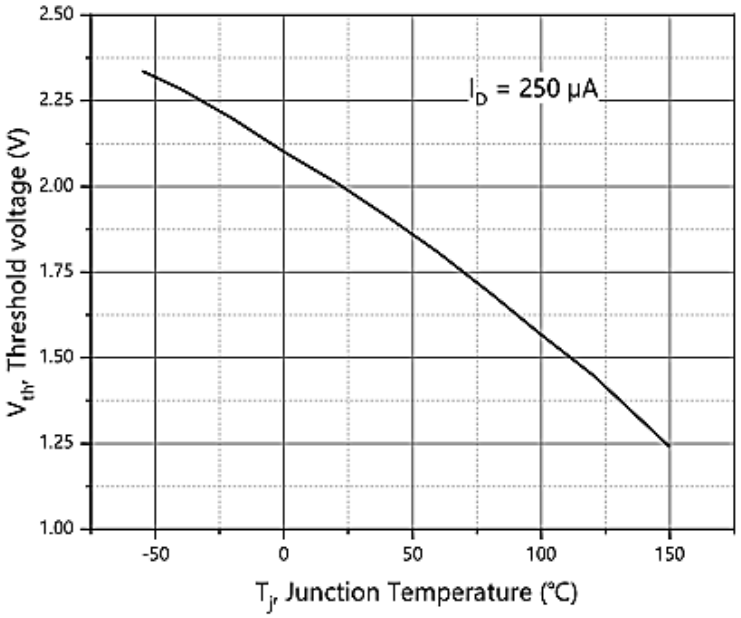


Figure 7. Threshold voltage

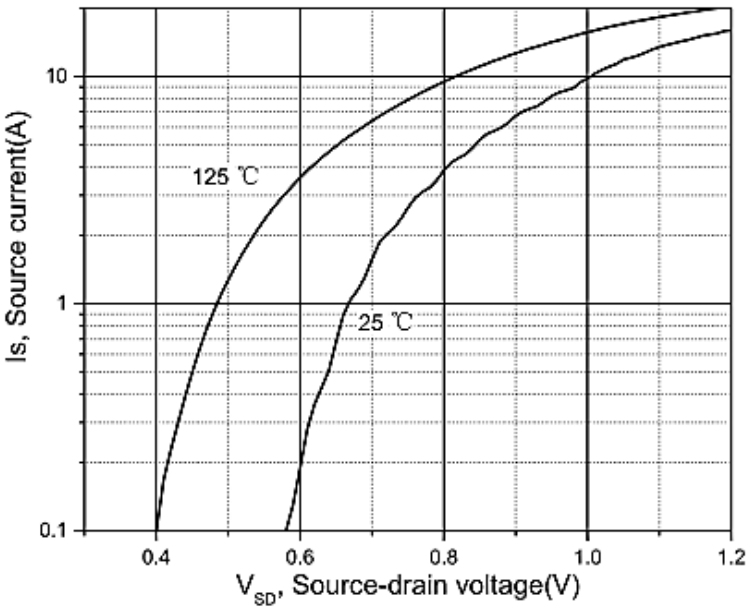


Figure 8. Forward characteristic of body diode

TYPICAL PERFORMANCE - For Reference Only

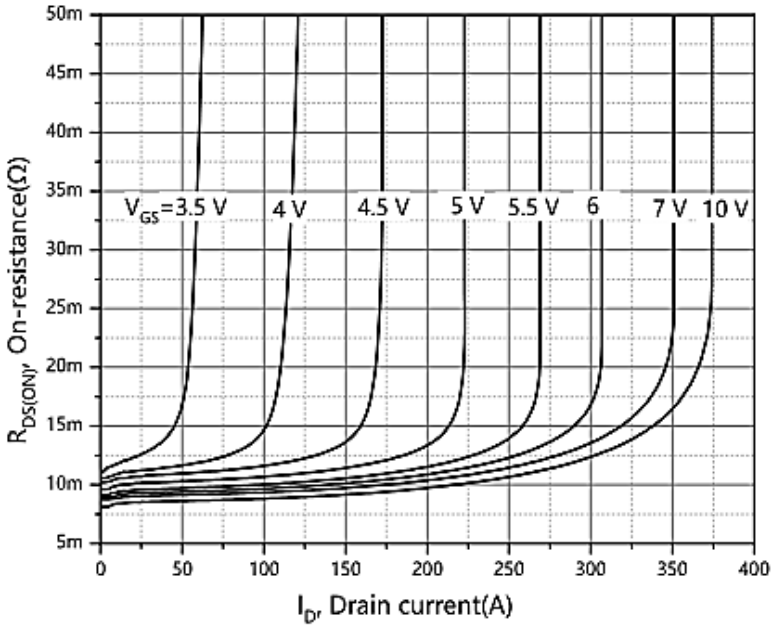


Figure 9. Drain-source on-state resistance

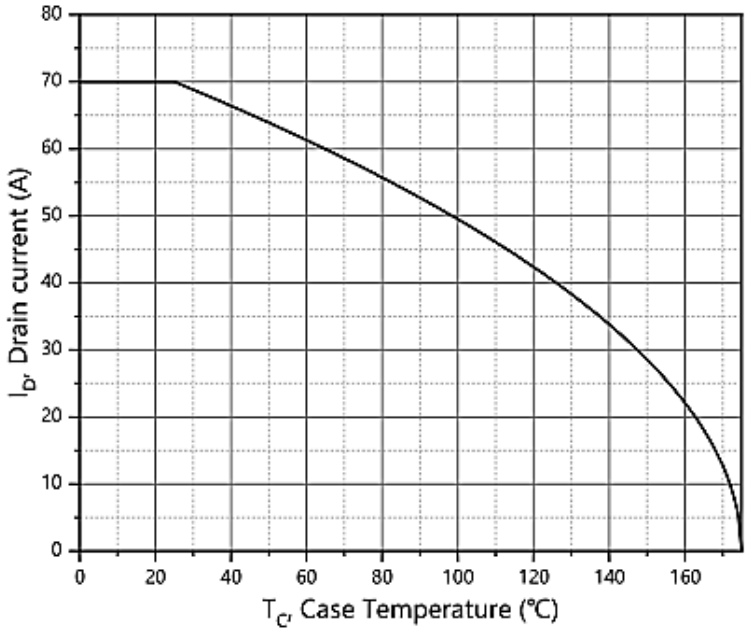


Figure 10. Drain current

TYPICAL PERFORMANCE - For Reference Only

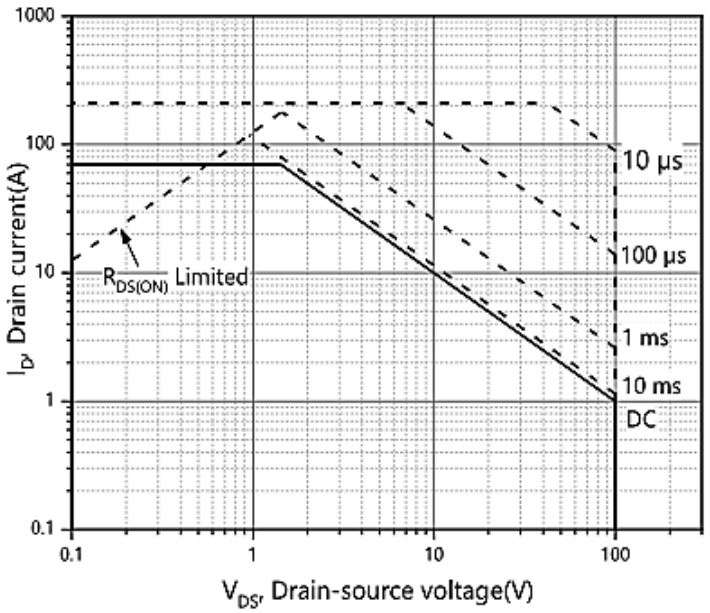


Figure 11. Safe operation area T_C=25 °C

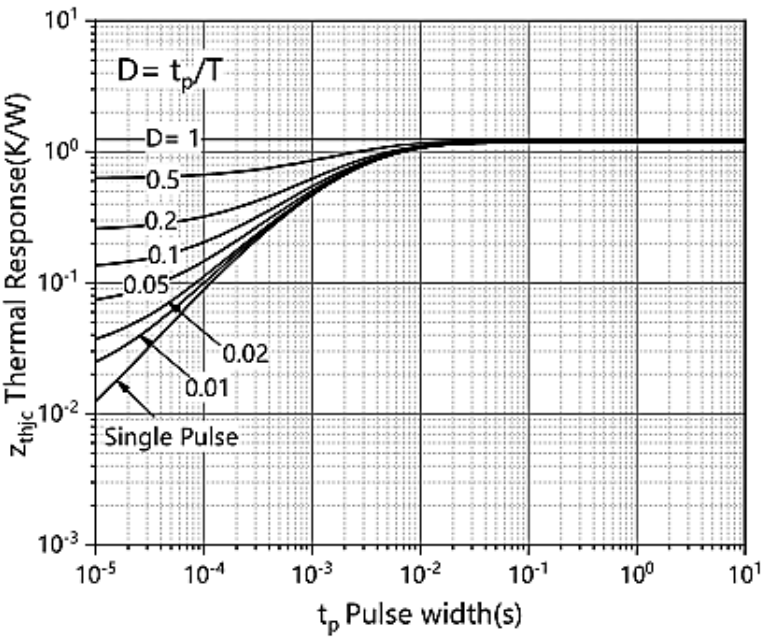
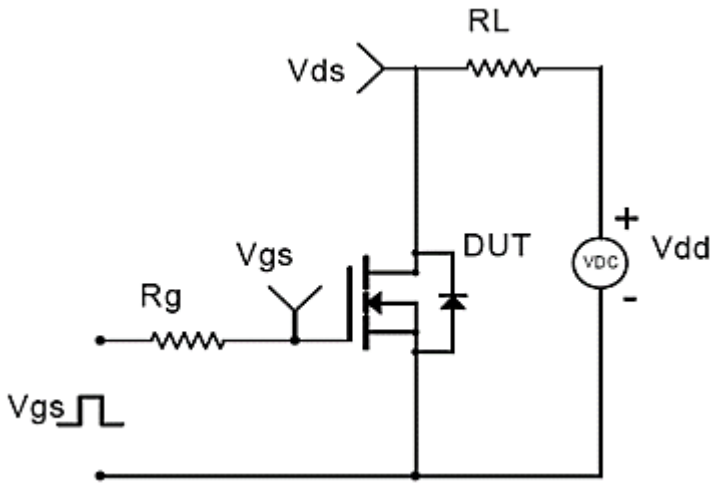
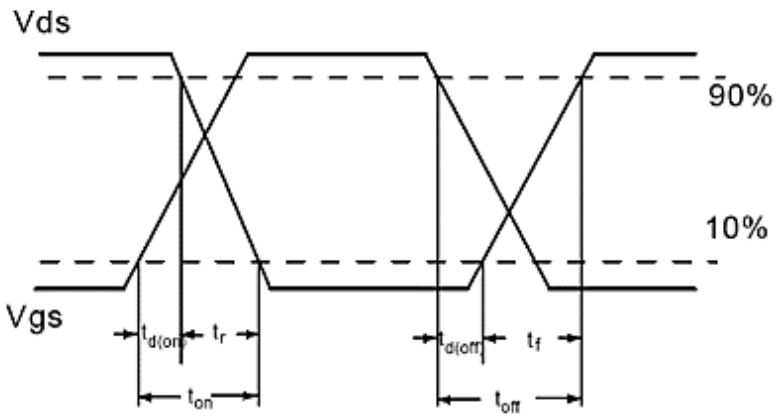


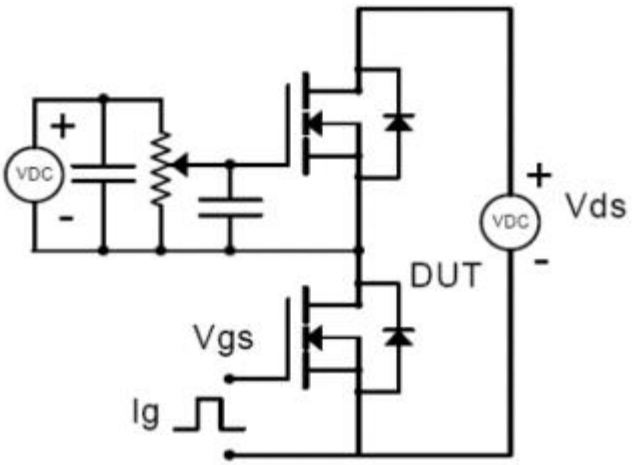
Figure 12. Max. transient thermal impedance

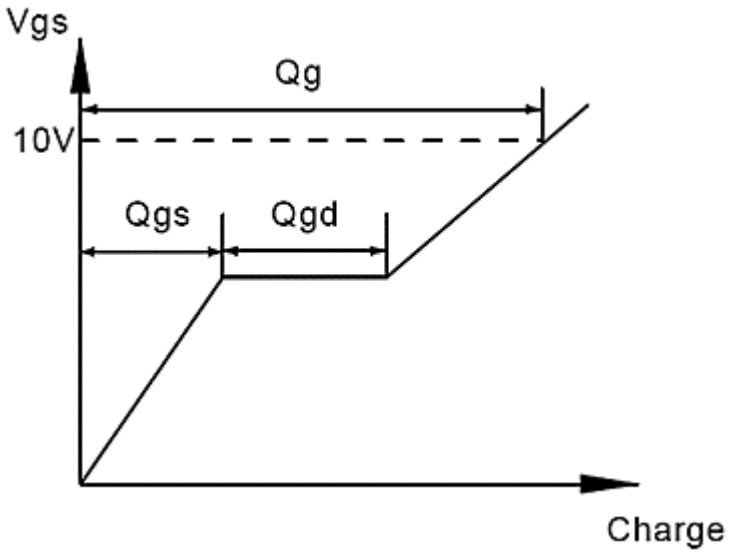
SWITCHING TEST CIRCUIT & WAVEFORMS



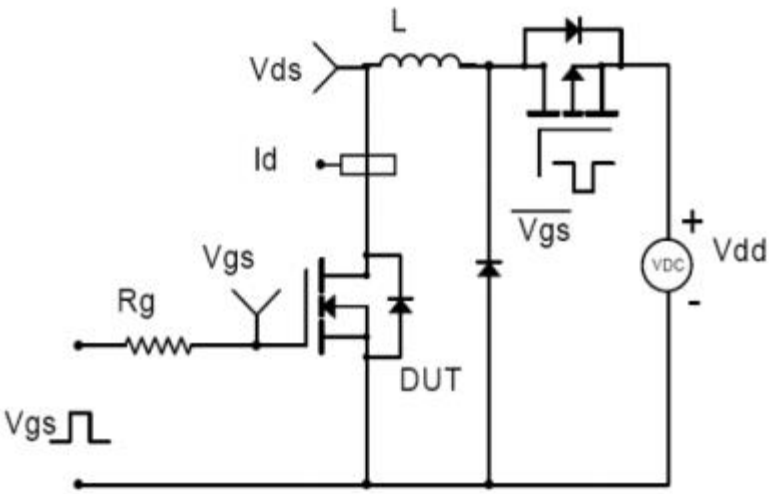


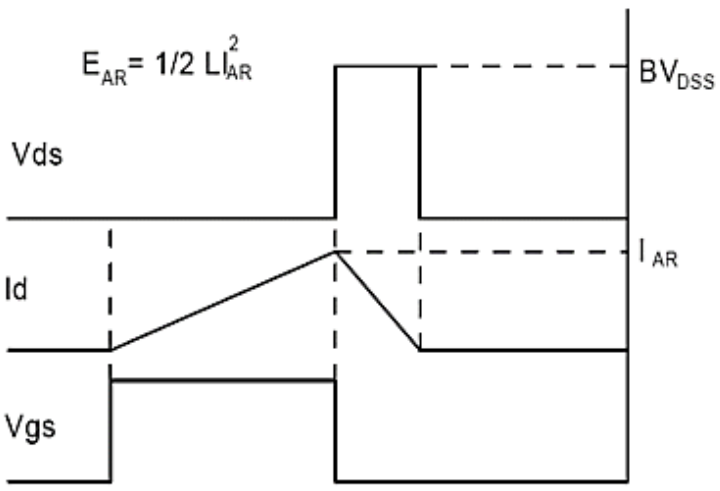
GATE CHARGE TEST CIRCUIT & WAVEFORM



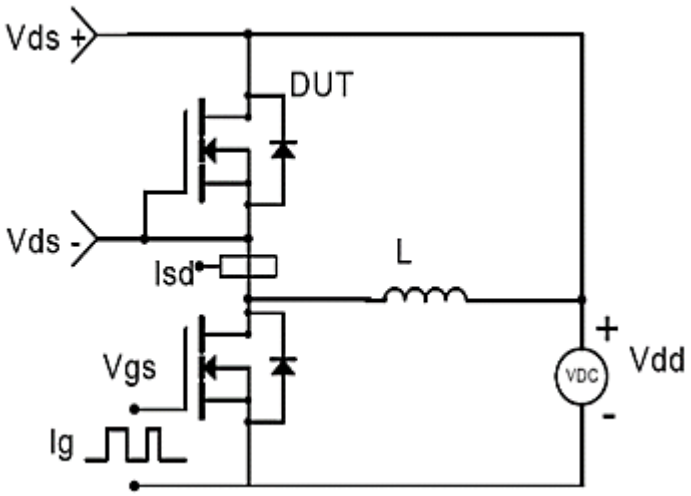


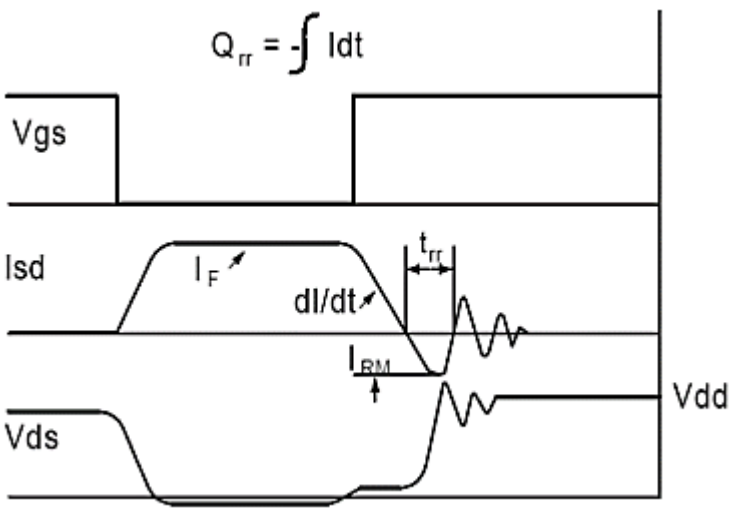
UNCLAMPED INDUCTIVE SWITCHING (UIS) TEST CIRCUIT & WAVEFORMS



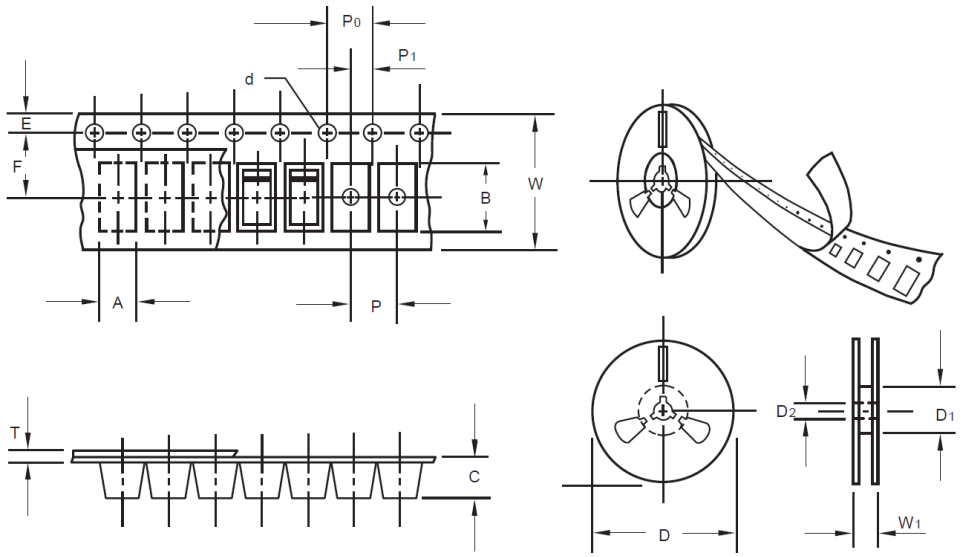


DIODE REVERSE RECOVERY TEST CIRCUIT & WAVEFORMS





TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



ITEM	SYMBOL	TOLERANCE	TO-252
Carrier width	A	0.1	6.15
Carrier Length	B	0.1	8.41
Carrier Depth	C	0.1	2.42
Sprocket hole	d	0.05	1.50
13”Reel outside diameter	D	2.0	330.00
13”Reel inner diameter	D1	Min.	50.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	7.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	16.00
Reel width	W1	1.0	16.50
SPQ Per Reel	2500pcs		

IMPORTANT NOTES AND DISCLAIMER

1. ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained can be obtained at Download Center.
2. REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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