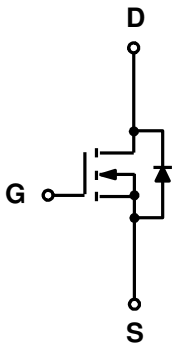
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

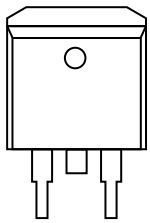
RM140N150CHD

N-Channel Enhancement Mosfet



Features

- 150V,140A
  $R_{DS(ON)}$ <7.2mΩ@V_{GS}=10V TYP:6.1mΩ
- Extremely low losses due to very low FOM Rdson*Qg.
- High-speed switching.
- Qualified for industrial grade applications according to JEDEC.
- 100% UIS Tested.



TO-263

Applications

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- Motor Control
- Halogen-free

Package Marking and Ordering Information

Device Marking	Device	Package	Packaging Code	Reel Size	Quantity(Pcs)	Carton(Pcs)
140N150	RM140N150CHD	TO-263	-W	13inch	800	6400

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage[a]		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (Silicon Limited)	Tc=25℃	I_D	140	A
Pulsed Drain Current		I_{DM}	500	A
Single Pulsed Avalanche Energy (VDD=50V,L=0.5mH) [C]		E_{AS}	506	mJ
Drain Power Dissipation		P_D	300	W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	0.5	℃/W
Thermal Resistance- Junction to Ambient		$R_{\theta JA}$	60	℃/W
Junction Temperature		T_J	175	℃
Storage Temperature		T_{STG}	-55~ +175	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	150	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =150V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.5	3.3	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	6.1	7.2	mΩ
Gate Resistance	Rg	V_{GS}=0V, V_{DS} Open, f=1MHz		0.5		Ω
Transconductance	Gfs	V_{DS} =5V, I_D =20A		80		S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =75V, V_{GS} =0V, f =1.0MHz	-	6300	-	pF
Output Capacitance	C_{oss}		-	412	-	
Reverse Transfer Capacitance	C_{rss}		-	10	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=75V, I_D=100A, R_G=1.6Ω, V_G=10V	-	30	-	ns
Turn-on rise time	t_r		-	130	-	
Turn-off delay time	$t_{d(off)}$		-	44	-	
Turn-off fall time	t_f		-	105	-	
Total Gate Charge	Qg	V_{DS}=75V, I_D=20A, V_{GS}=10V	-	76	-	nC
Gate-Source Charge	Qgs		-	26	-	
Gate-Drain Charge	Qgd		-	13	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=10A	-	0.76	-	V
Diode Forward current	I_S	T_C=25℃	-	-	140	A
Body Diode Reverse Recovery Time	trr	T_J=25℃，IF=100A,di/dt=100A/us		45		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃，IF=100A,di/dt=100A/us		12		uc

Notes:

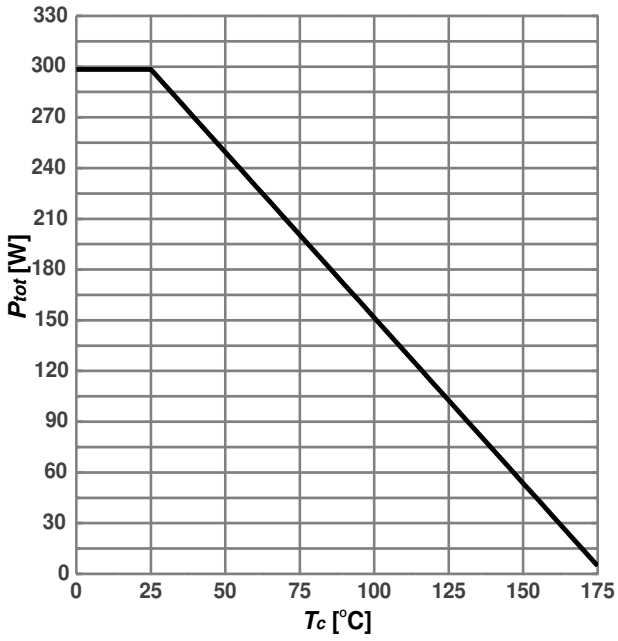
a) Limited by Tj max. Maximum duty cycle D=0.75.

b) Pulse width tp limited by Tj,max.

c) VDD=50V, L=0.5mH, RG=25Ω, Starting Tj=25°C

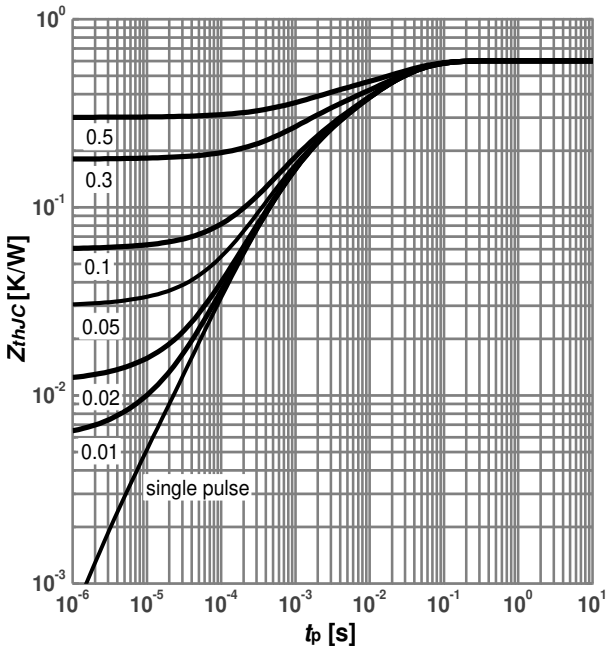
RATING AND CHARACTERISTICS CURVES (RM140N150CHD)

Diagram 1: Power dissipation



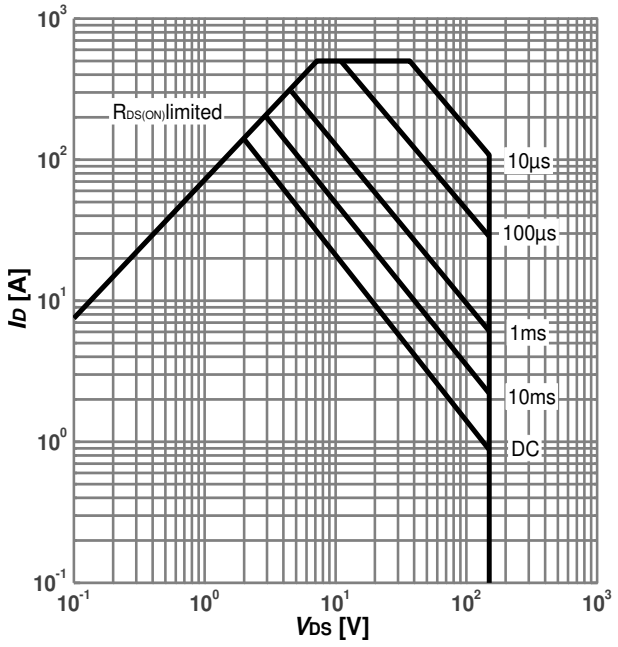
P_{tot}=f(T_C)

Diagram 2: Max. transient thermal impedance



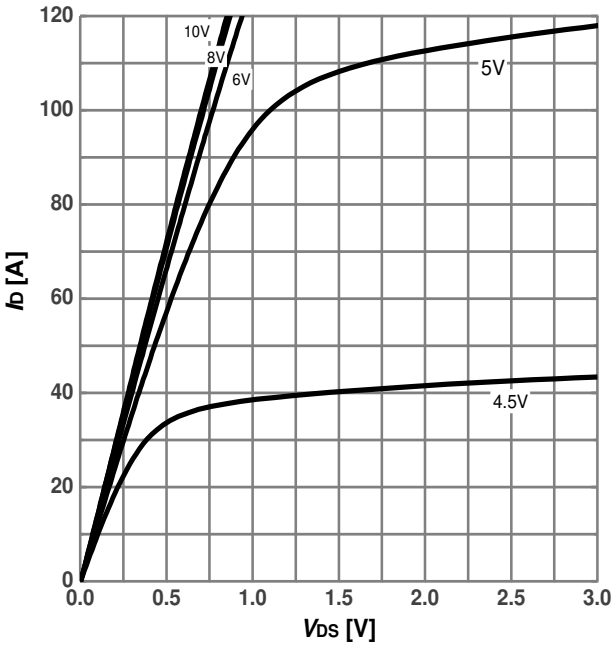
Z_{thJC}=f(t_p); parameter: D= t_p/T

Diagram 3: Safe operating area



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

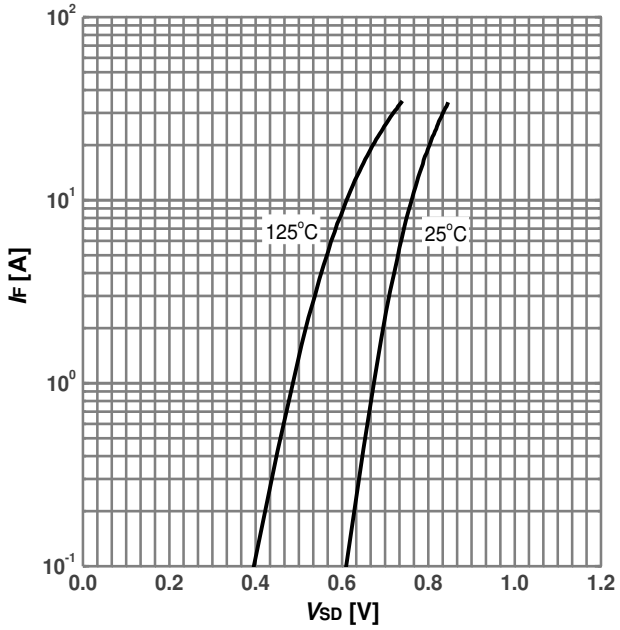
Diagram 4: Typ. output characteristics



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

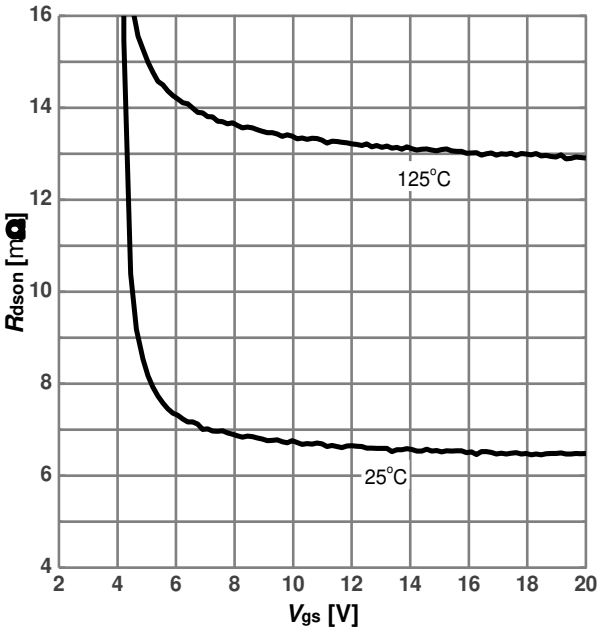
RATING AND CHARACTERISTICS CURVES (RM140N150CHD)

Diagram 9: Forward characteristics of reverse diode



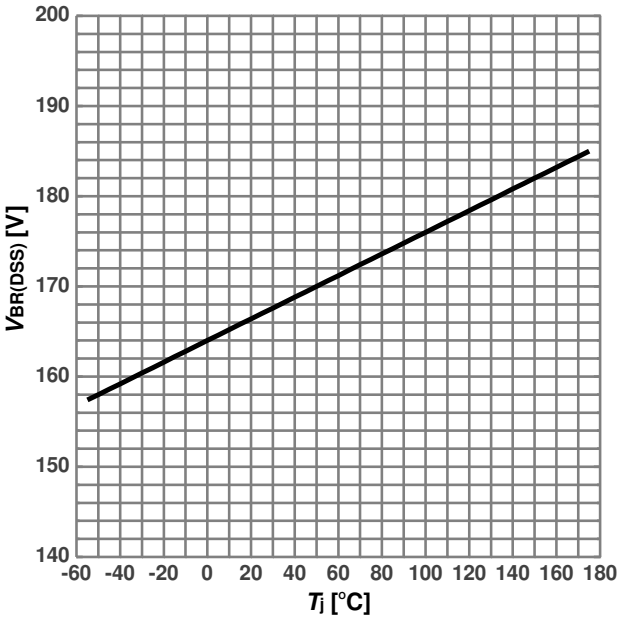
I_F=f(V_{SD}); parameter: T_j

Diagram 10: On state resistance vs. Vgs characteristics



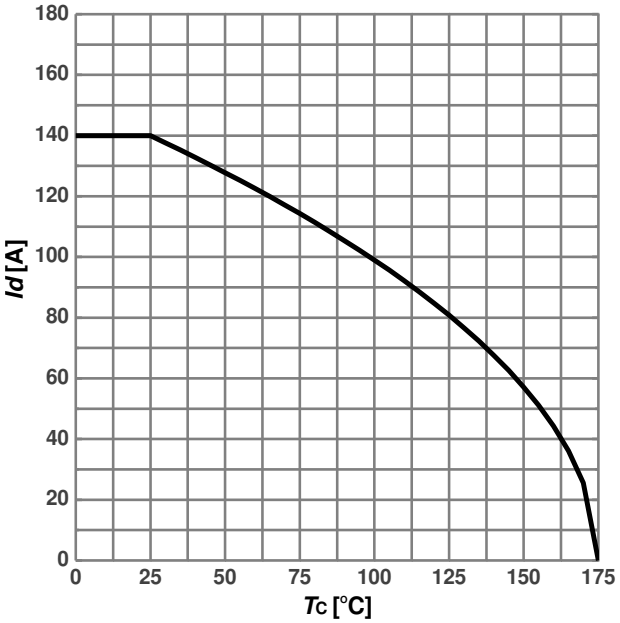
R_{DS}(on)=f(V_{gs}); I_D=20A; parameter: T_j

Diagram 11: Breakdown Voltage Variation vs. Temperature



$V_{BR(DSS)}$=f(T_j); I_D=250μA

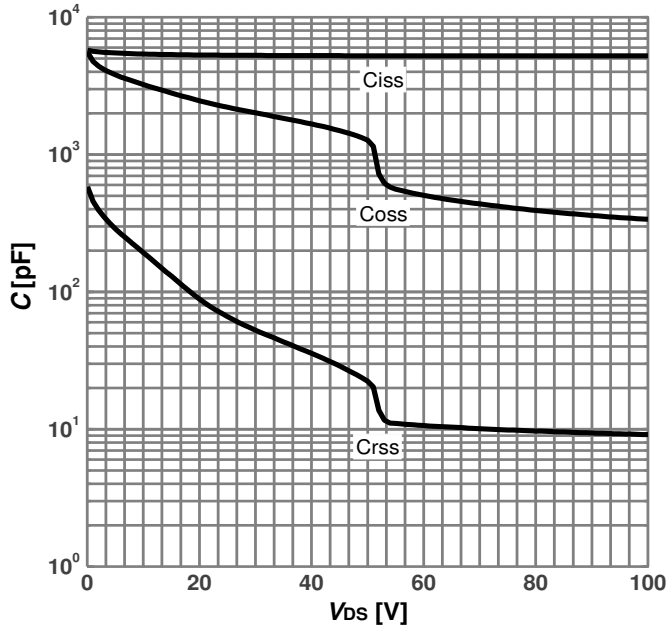
Diagram 12: Maximum Drain Current



I_D= f(T_c); V_{GS}=10V

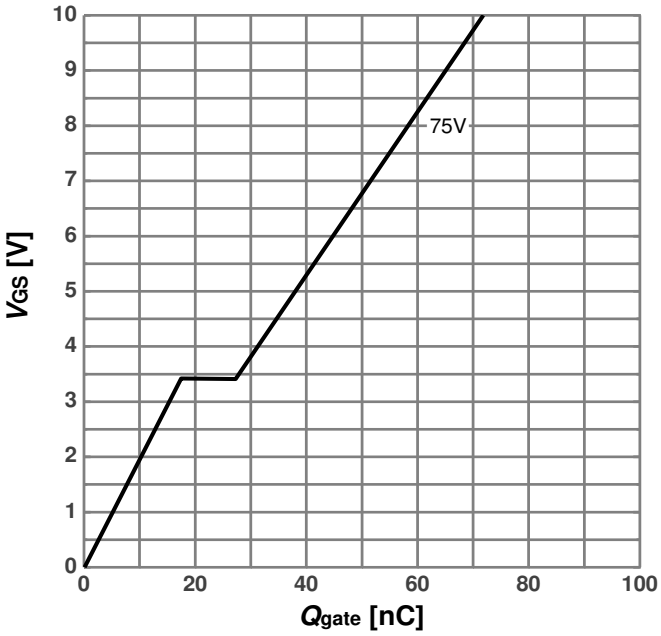
RATING AND CHARACTERISTICS CURVES (RM140N150CHD)

Diagram 13: Typ. capacitances



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

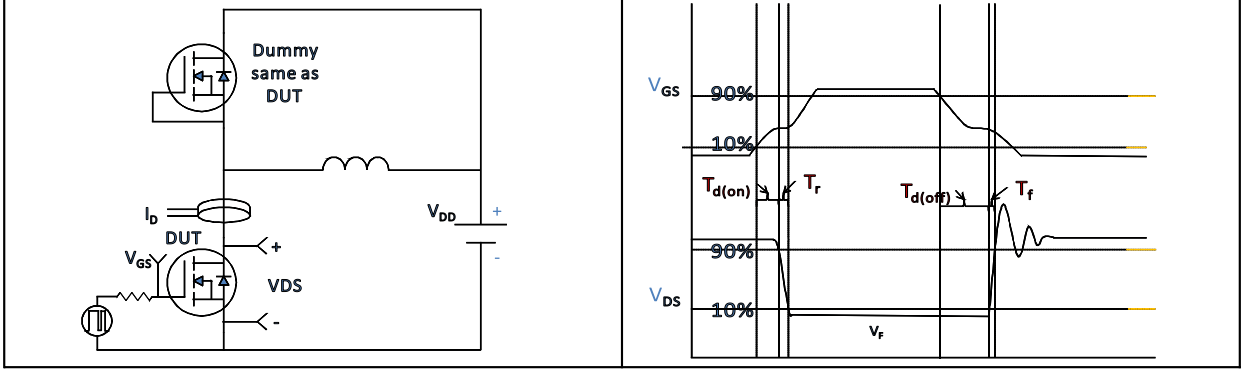
Diagram 14: Typ. gate charge



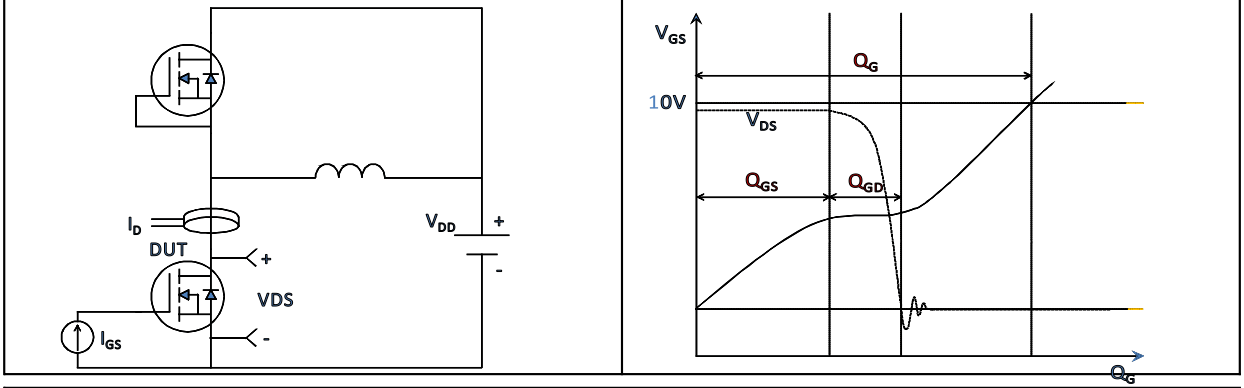
V_{GS}=f(Q_{gate}); I_D=20A pulsed; V_{DS}=75V

Test Circuit

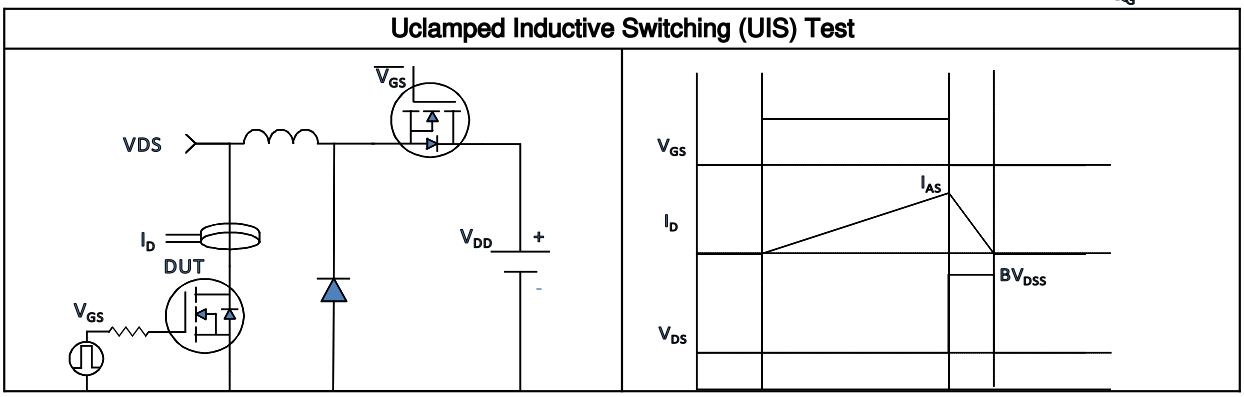
Inductive switching Test



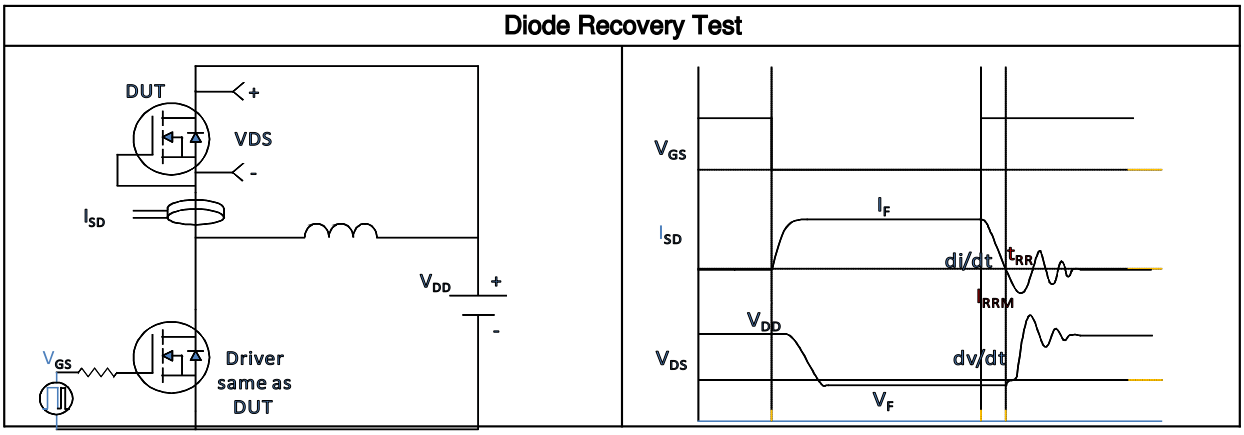
Gate Charge Test



Uclamped Inductive Switching (UIS) Test



Diode Recovery Test



Package Dimensions

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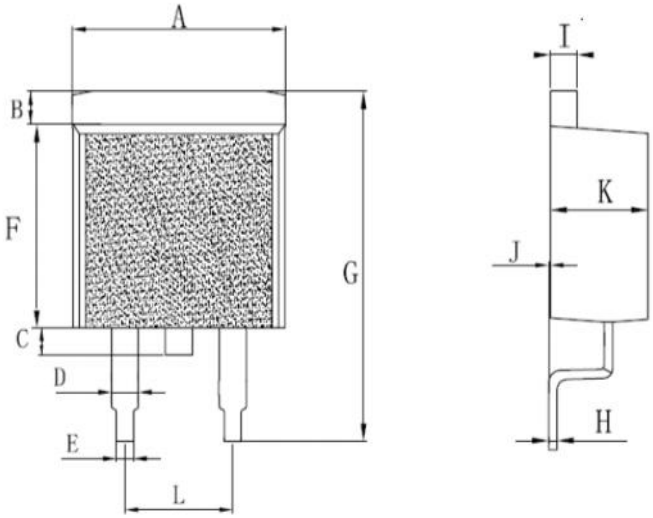

DIM.	Unit(mm)		Unit(inch)	
	Min	Max	Min	Max
A	9.7	10.4	0.381	0.409
B	1.31	1.62	0.051	0.063
C	0.65	1.22	0.025	0.048
D	1.15	1.36	0.045	0.053
E	0.62	0.95	0.024	0.037
F	8.75	9.32	0.344	0.366
G	14.75	15.8	0.580	0.622
H	0.32	0.48	0.012	0.018
I	1.18	1.36	0.046	0.053
J	0	0.15	0	0.005
K	4.38	4.86	0.172	0.191
L	4.85	5.23	0.190	0.205

RECTRON

Marking on the body

Rectron Logo →  **Y Y W W**

Year – Code
(Y:24-----2024
25-----2025.....)

Week – code
(WW:01~52)

1 4 0 N 1 5 0 ← Part No.

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