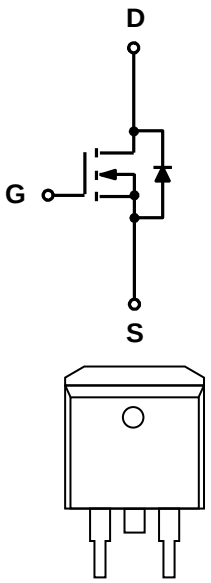
Features

- 150V,140A
  $R_{DS(ON)}$ <7.5mΩ@V_{GS}=10V TYP:6.6mΩ
- 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

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G075N15D	APG075N15D	TO-263	-	-	800

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	2.0	2.9	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	6.6	7.5	mΩ
Gate Resistance	Rg	V_{GS}=0V, V_{DS} Open, f=1MHz		2.4		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	-	5240	-	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	-	22	-	ns
Turn-on rise time	t_r		-	115	-	
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	-	18	-	nC
Gate-Source Charge	Qgs		-	10	-	
Gate-Drain Charge	Qgd		-	72	-	
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:

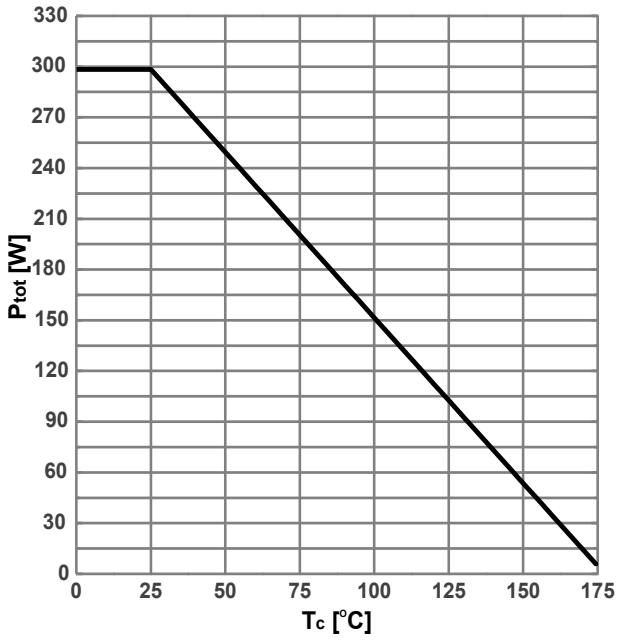
a) Limited by Tj max. Maximum duty cycle D=0.75.

b) Pulse width tp limited by Tj,max.

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

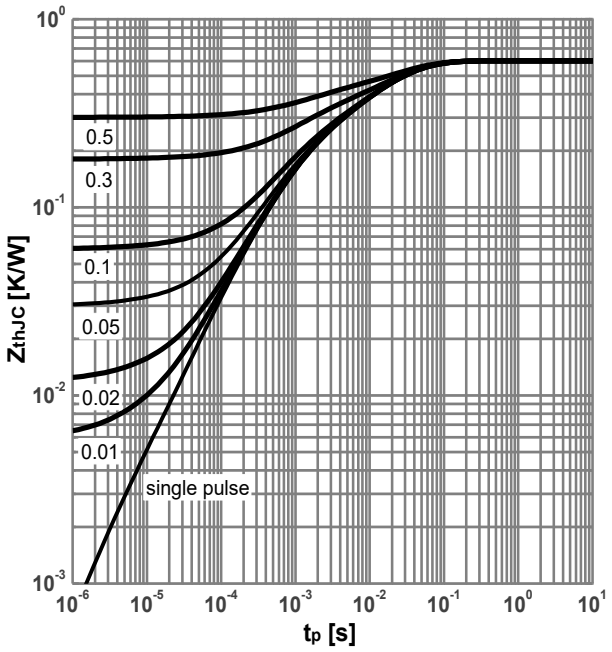
Typical Characteristics

Diagram 1: Power dissipation



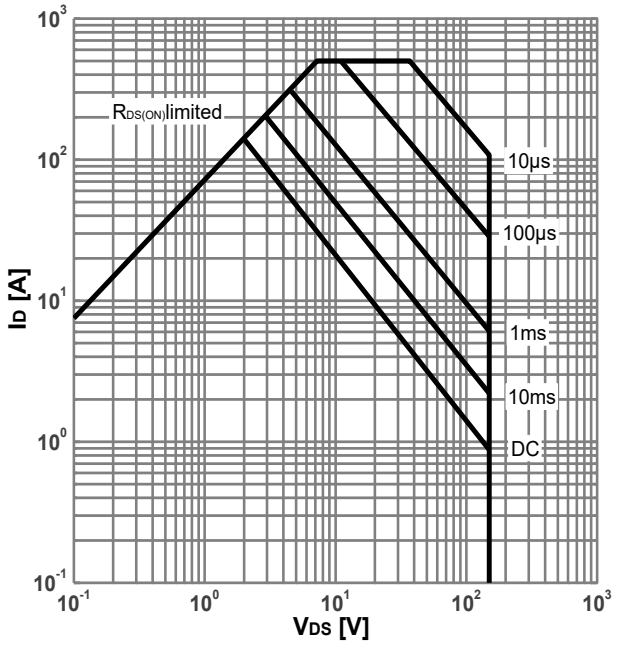
P_{tot}=f(T_C)

Diagram 2: Max. transient thermal impedance



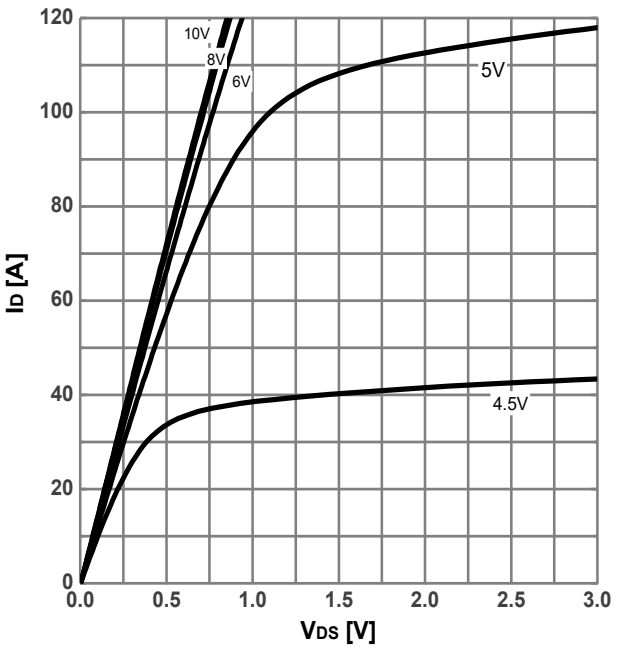
Z_{thJC}=f(t_p); parameter: D= t_p/T

Diagram 3: Safe operating area



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

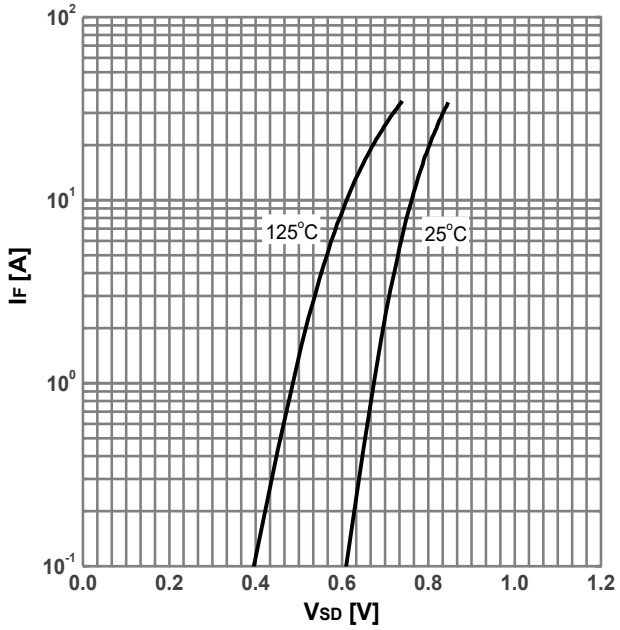
Diagram 4: Typ. output characteristics



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

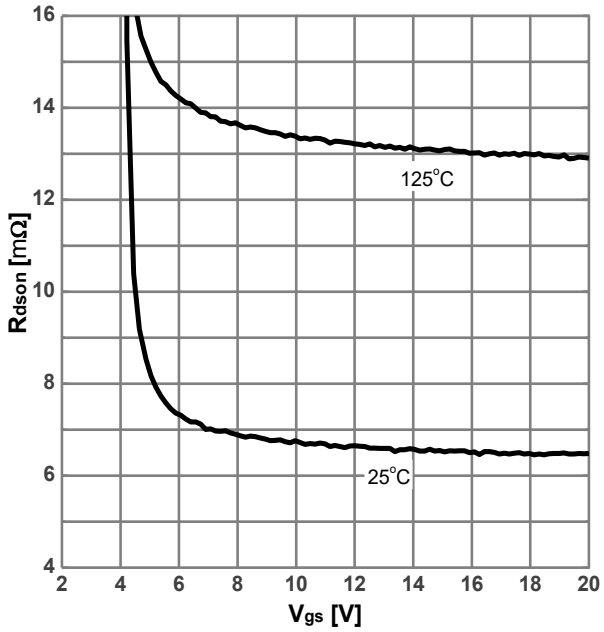
Typical Characteristics

Diagram 9: Forward characteristics of reverse diode



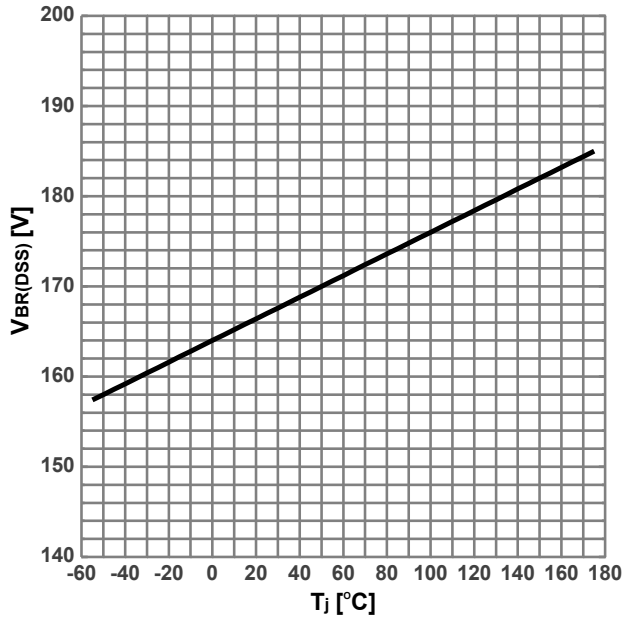
I_F=f(V_{SD}); parameter: T_j

Diagram 10: On state resistance vs. Vgs characteristics



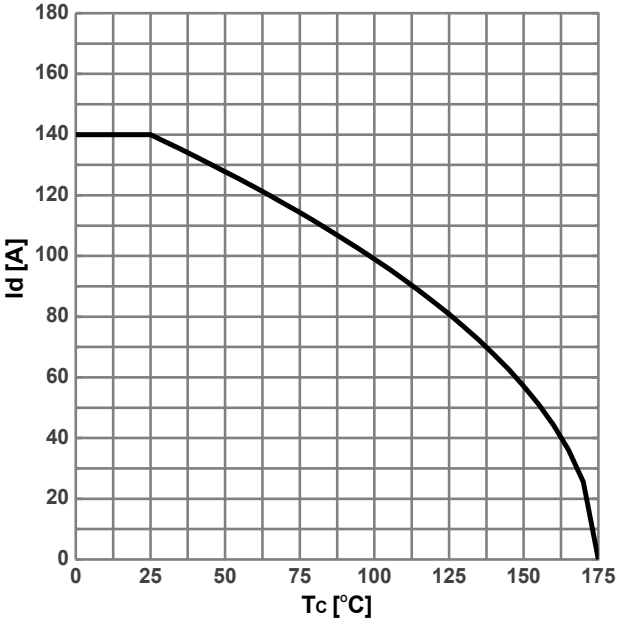
R_{DS}(on)=f(V_{gs}); I_D=20A; parameter: T_j

Diagram 11: Breakdown Voltage Variation vs. Temperature



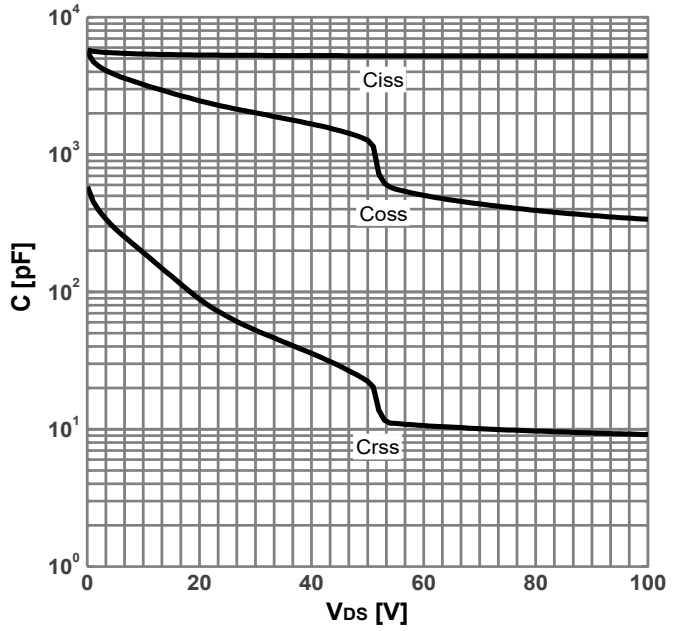
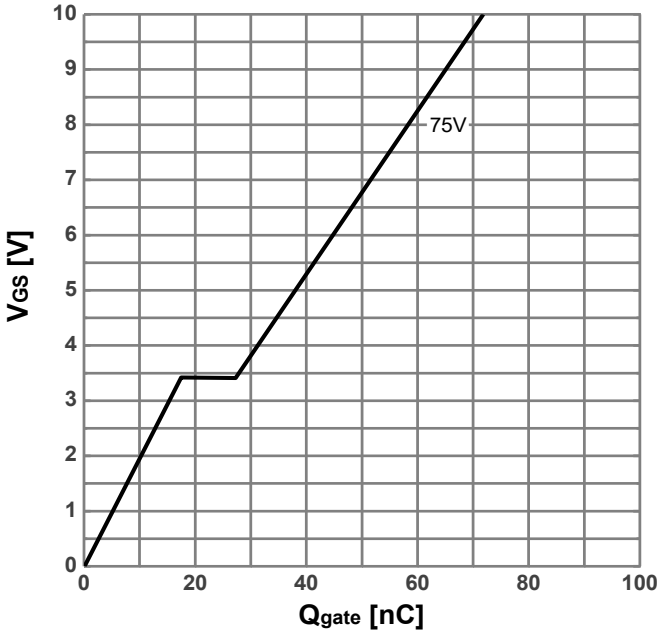
$V_{BR(DSS)}$=f(T_j); I_D=250μA

Diagram 12: Maximum Drain Current



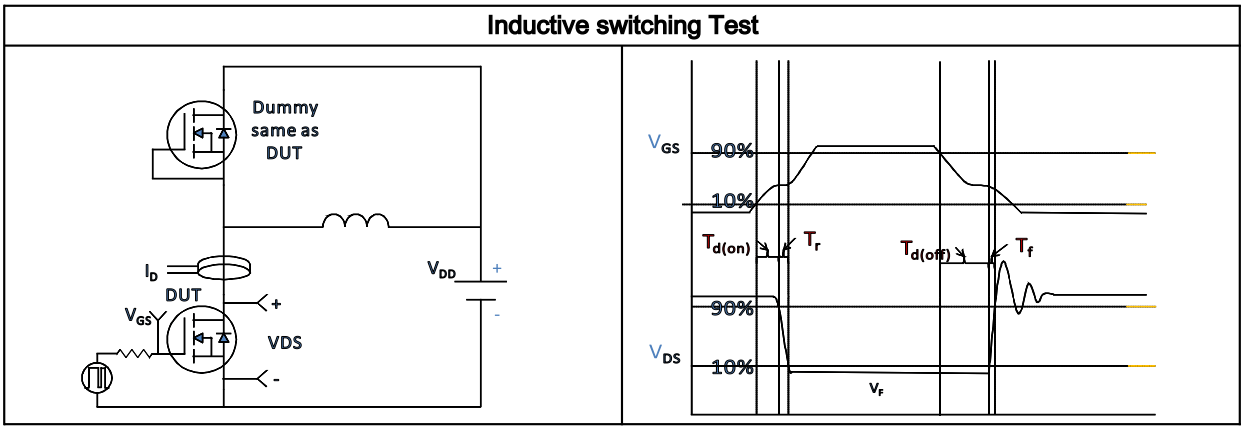
I_D= f(T_c); V_{GS}=10V

Typical Characteristics

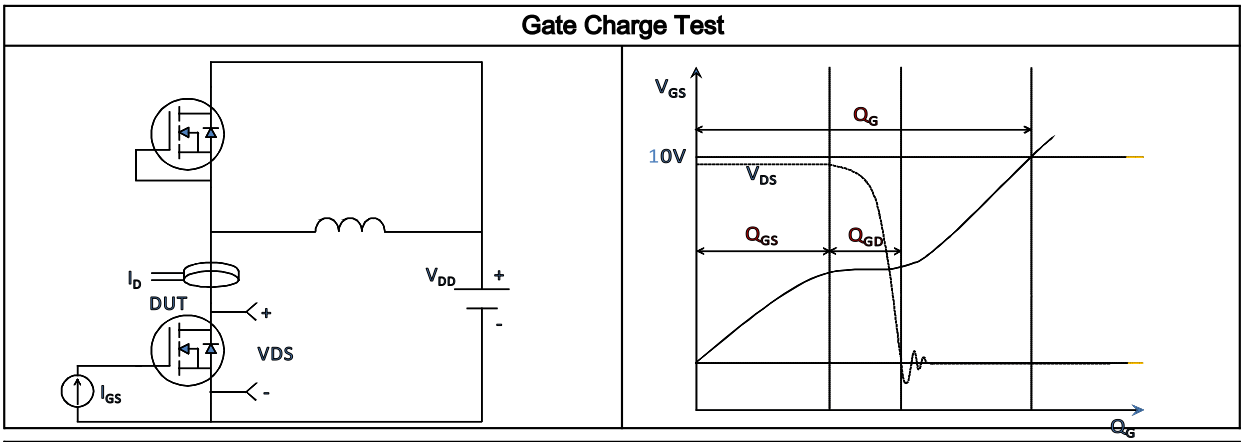
Diagram 13: Typ. capacitances	Diagram 14: Typ. gate charge
	
C=f(V_{DS}); V_{GS}=0V; f=1MHz	V_{GS}=f(Q_{gate}); I_D=20A pulsed; V_{DS}=75V

Test Circuit

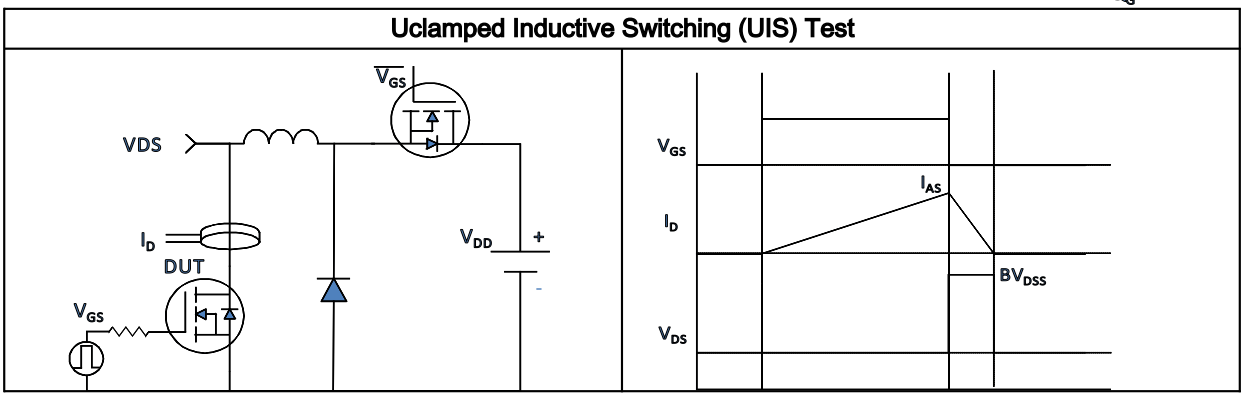
Inductive switching Test



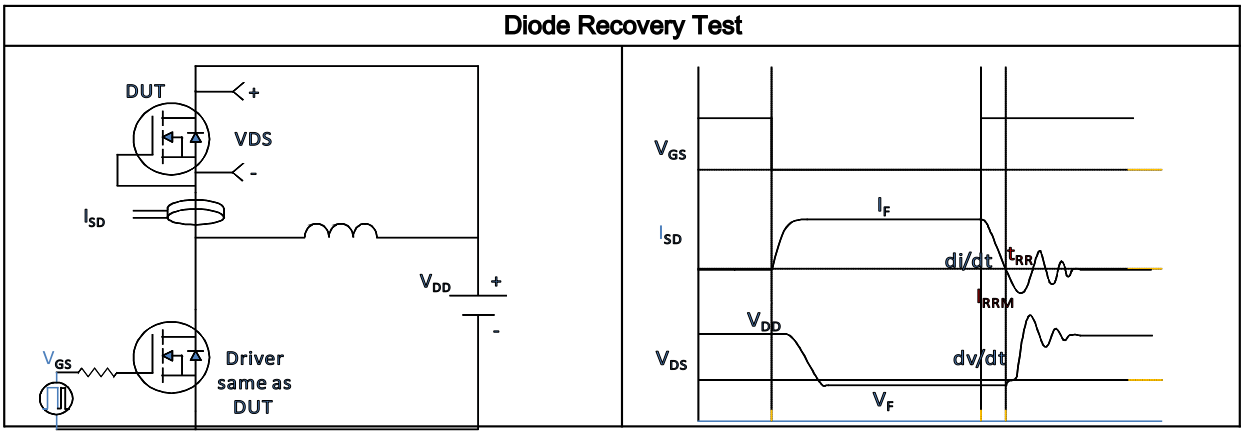
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

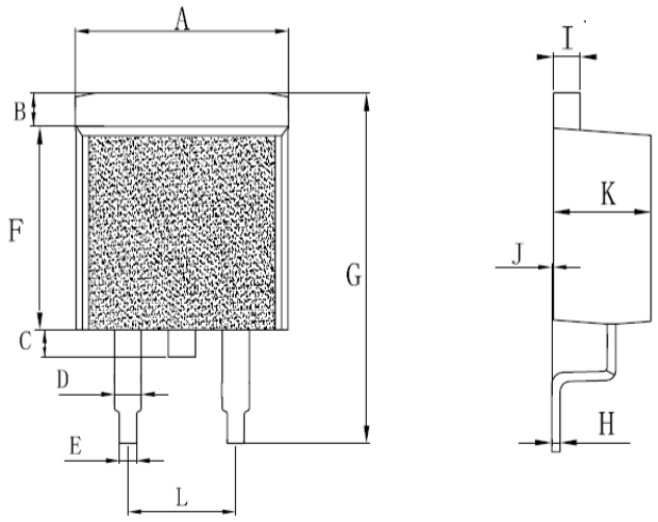


Diode Recovery Test



Package Dimensions

TO-263



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

Revision History

Revision	Release	Remark
V1.0	2023/03/01	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product,but similar performance is not guaranteed under other working conditions,and cannot be guaranteed when installed with other products or equipment.To achieve the required performance of the product in actual scenarios,the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings,operating conditions,or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability.Customers using or selling these products for use in medical,life-saving,or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements,the information described or contained herein may be changed without prior notice.