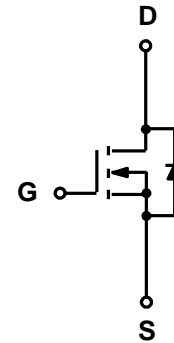


Features

- 150V,140A
 $R_{DS(on)} < 7.5m\Omega @ V_{GS}=10V$ TYP:6.6m Ω
- Extremely low losses due to very low FOM $R_{dson} * Q_g$.
- High-speed switching.
- Qualified for industrial grade applications according to JEDEC.
- 100% UIS Tested.



Applications

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



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G075N15	APG075N15	TO-220	-	-	1000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ 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) $T_c=25^{\circ}C$	I_D	140	A
Pulsed Drain Current	I_{DM}	500	A
Single Pulsed Avalanche Energy ($V_{DD}=50V, L=0.5mH$) ^(c)	E_{AS}	506	mJ
Drain Power Dissipation	P_D	300	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.5	$^{\circ}C/W$
Thermal Resistance- Junction to Ambient	$R_{\theta JA}$	60	$^{\circ}C/W$
Junction Temperature	T_J	175	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +175	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

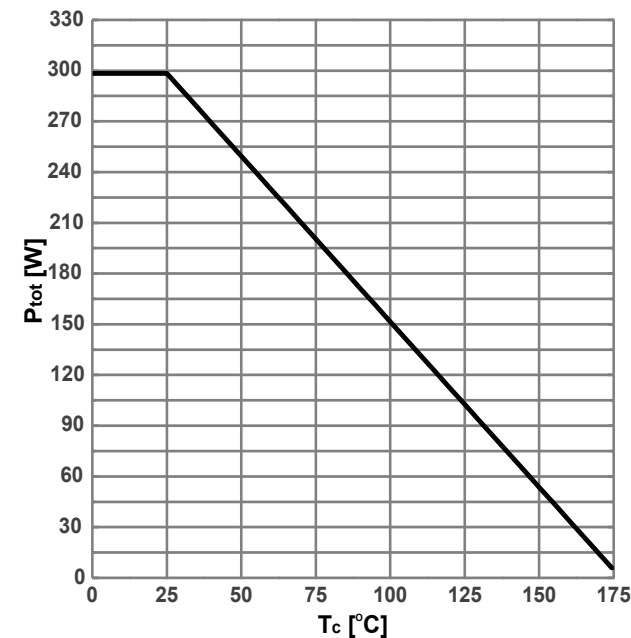
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	150	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =150V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±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	R _g	V _{GS} =0V, V _{DS} Open, f=1MHz		2.4		Ω
Transconductance	G _{fs}	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 _{GS} =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	Q _g	V _{DS} =75V, I _D =20A, V _{GS} =10V	-	18	-	nC
Gate-Source Charge	Q _{gs}		-	10	-	
Gate-Drain Charge	Q _{gd}		-	72	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	T _J =25°C, V _{GS} =0V, I _S =10A	-	0.76	-	V
Diode Forward current	I _S	T _C =25°C	-	-	140	A
Body Diode Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =100A, di/dt=100A/us		45		ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _J =25°C, I _F =100A, di/dt=100A/us		12		uc

Notes:

- a) Limited by T_j max. Maximum duty cycle D=0.75.
- b) Pulse width t_p limited by T_j,max.
- c) V_{DD}=50V, L=0.5mH, R_G=25Ω, Starting T_j=25°C

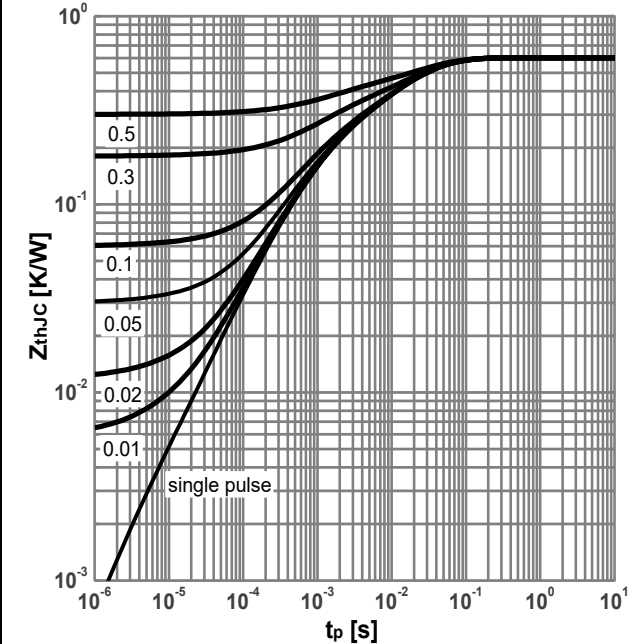
Typical Characteristics

Diagram 1: Power dissipation



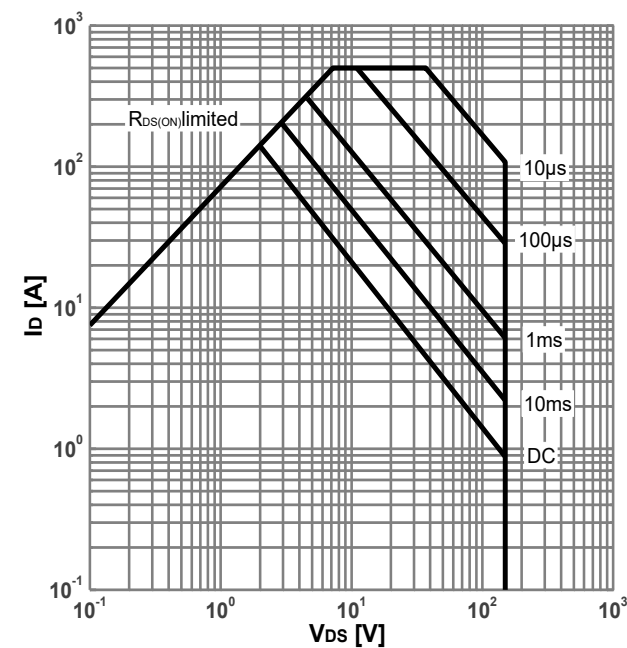
$P_{tot}=f(T_c)$

Diagram 2: Max. transient thermal impedance



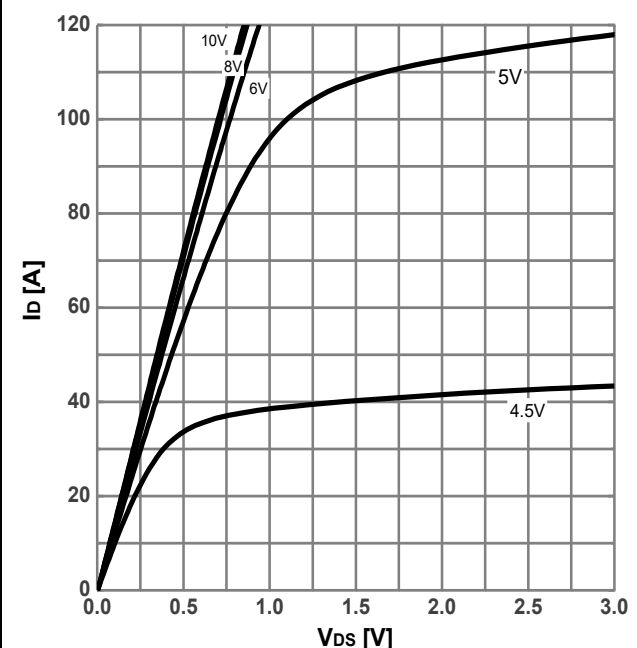
$Z_{thJC}=f(t_p)$; parameter: $D= t_p/T$

Diagram 3: Safe operating area



$I_D=f(V_{DS})$; $T_J=25^\circ\text{C}$; $D=0$; parameter: t_p

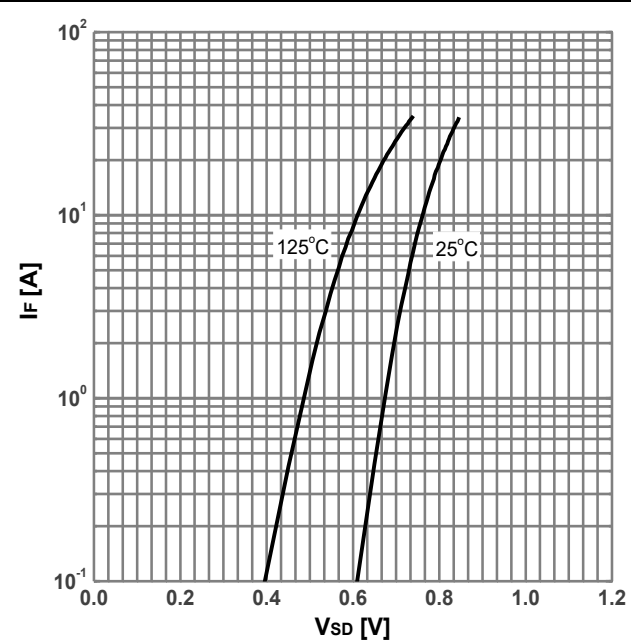
Diagram 4: Typ. output characteristics



$I_D=f(V_{DS})$; $T_J=25^\circ\text{C}$; parameter: V_{GS}

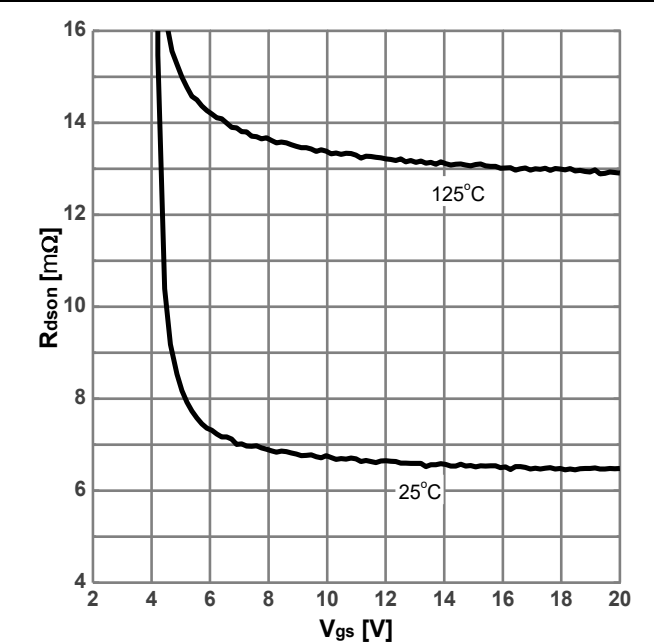
Typical Characteristics

Diagram 9: Forward characteristics of reverse diode



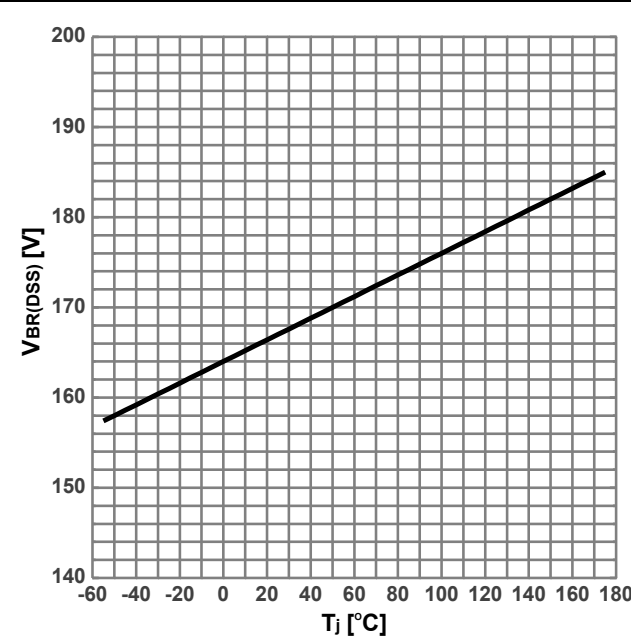
$I_F = f(V_{SD});$ parameter: T_j

Diagram 10: On state resistance vs. Vgs characteristics



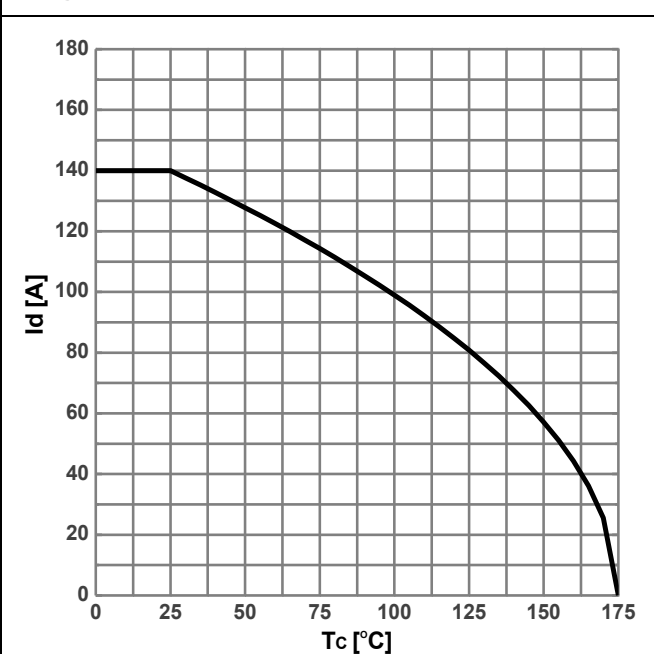
$R_{DS(on)} = f(V_{GS});$ $I_D = 20A;$ parameter: T_j

Diagram 11: Breakdown Voltage Variation vs. Temperature



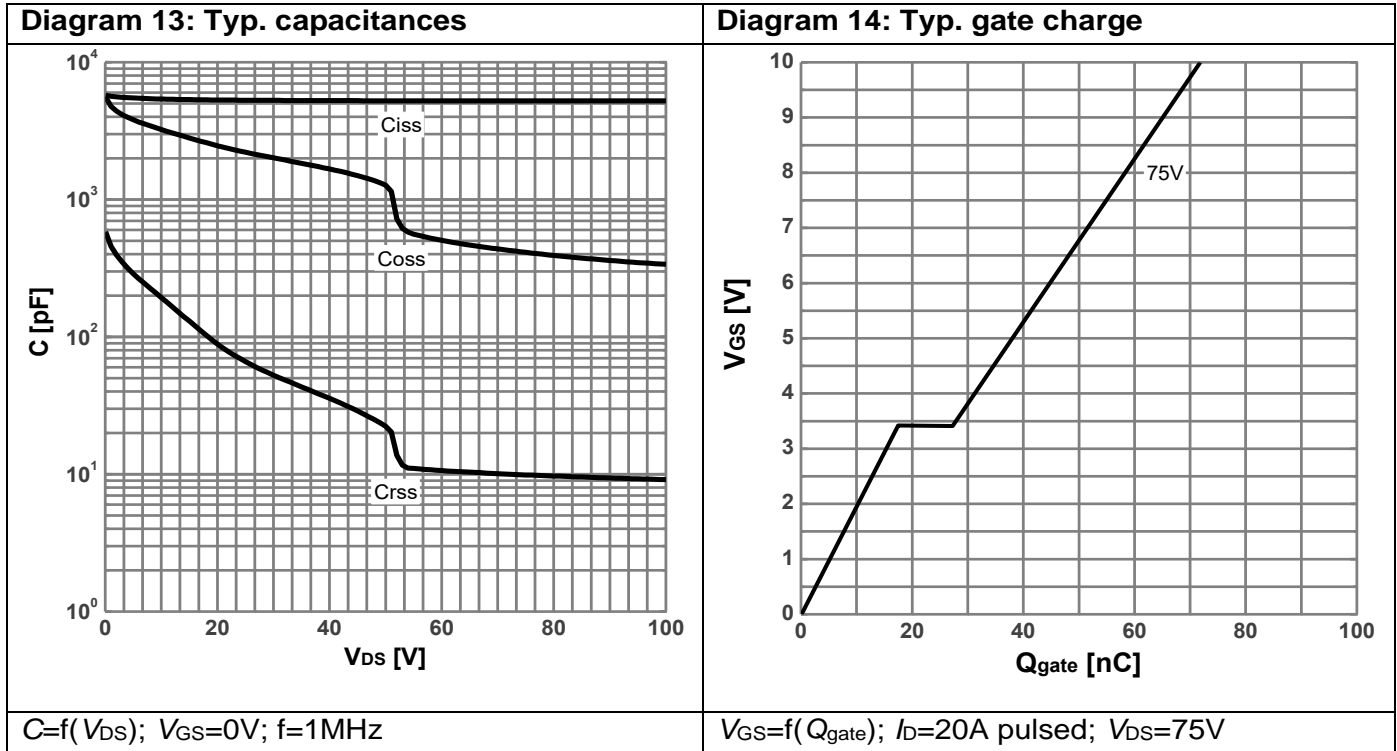
$V_{BR(DSS)} = f(T_j);$ $I_D = 250\mu A$

Diagram 12: Maximum Drain Current

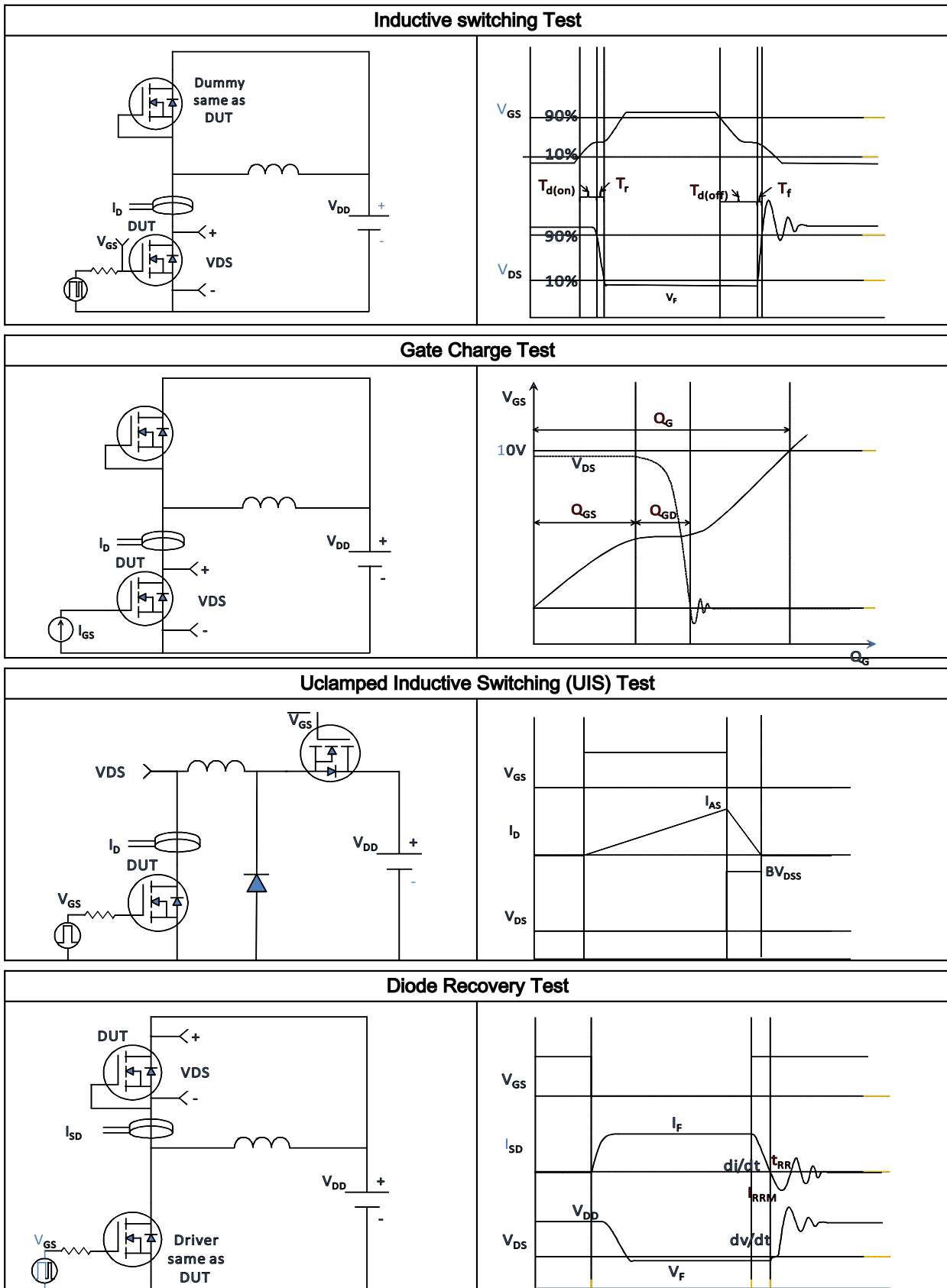


$I_D = f(T_c);$ $V_{GS} = 10V$

Typical Characteristics



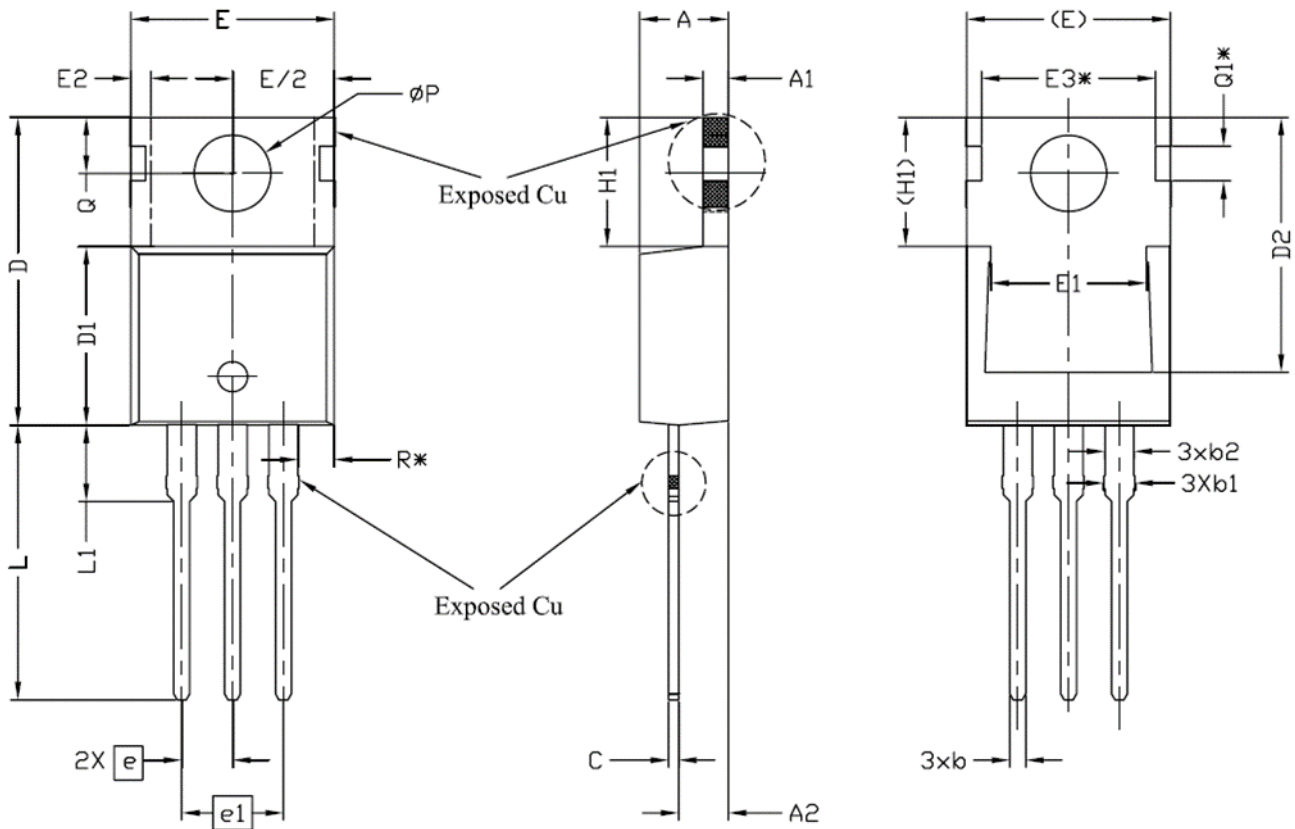
Test Circuit



APG075N15

N-Channel Enhancement Mosfet

TO220 Package Information



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.43	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E2	-	-	0.76	6
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
$\varnothing P$	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

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.