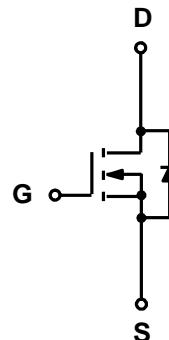


TPG075N15

N-Channel Enhancement Mosfet

Features

- 150V,140A
 $R_{DS(on)} < 7.5m\Omega @ V_{GS}=10V$ TYP:6.6m Ω
- Extremely low losses due to very low FOM $R_{ds(on)} * Q_g$.
- 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	TPG075N15	TO-220	-	-	1000

ABSOLUTE MAXIMUM RATINGS (T_a=25°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°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 _{θJC}	0.5	°C/W
Thermal Resistance- Junction to Ambient	R _{θJA}	60	°C/W
Junction Temperature	T _J	175	°C
Storage Temperature	T _{STG}	-55~ +175	°C

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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 _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	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:

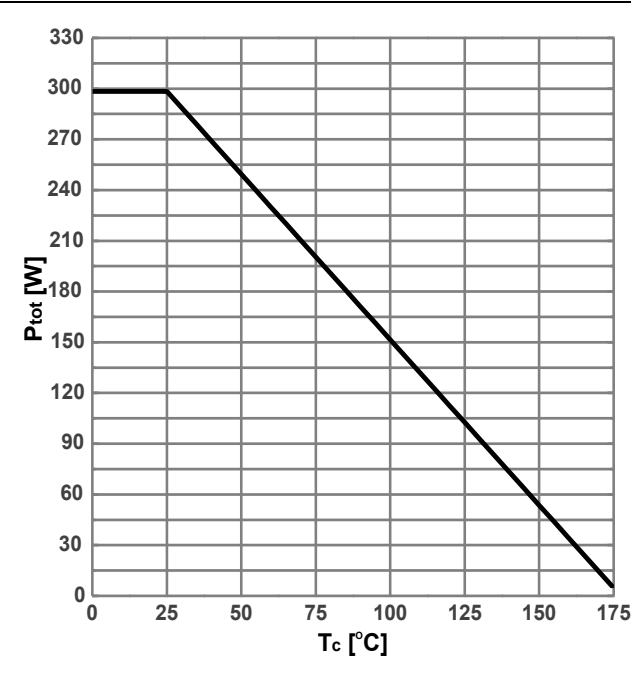
- Limited by T_j max. Maximum duty cycle D=0.75.
- Pulse width t_p limited by T_{j,max}.
- V_{DD}=50V, L=0.5mH, R_G=25Ω, Starting T_j=25°C

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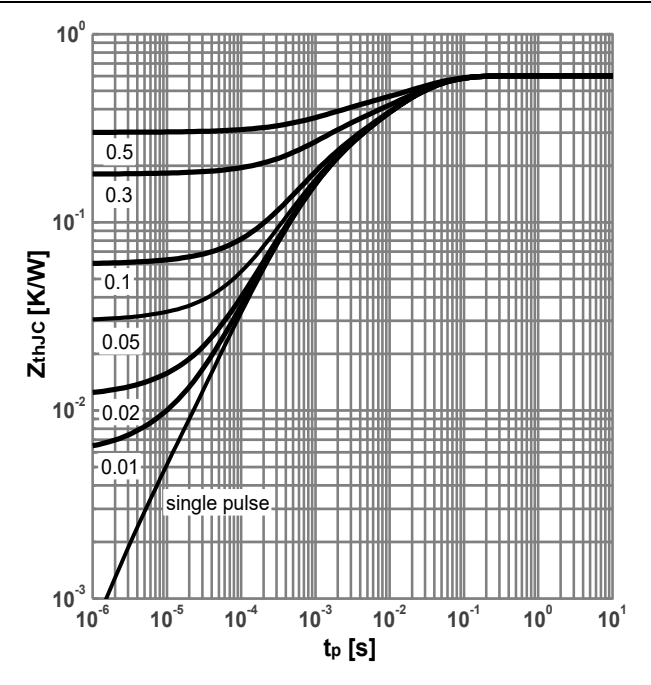
Typical Characteristics

Diagram 1: Power dissipation



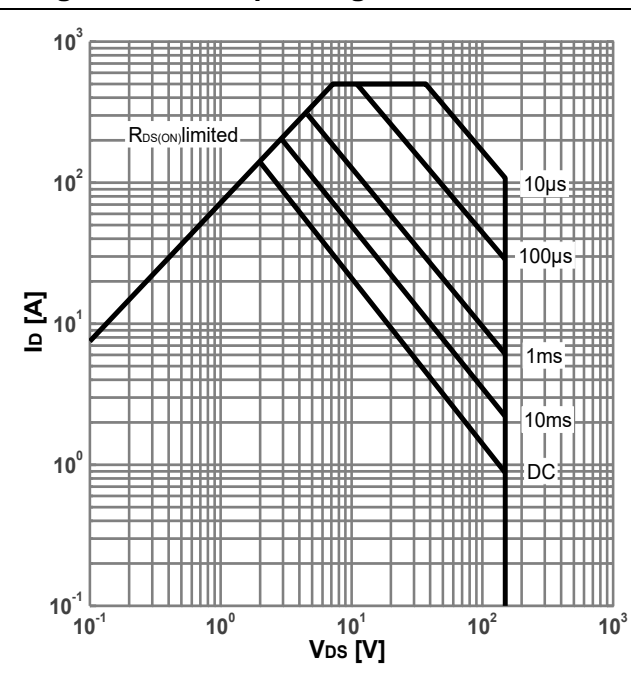
$P_{tot}=f(T_c)$

Diagram 2: Max. transient thermal impedance



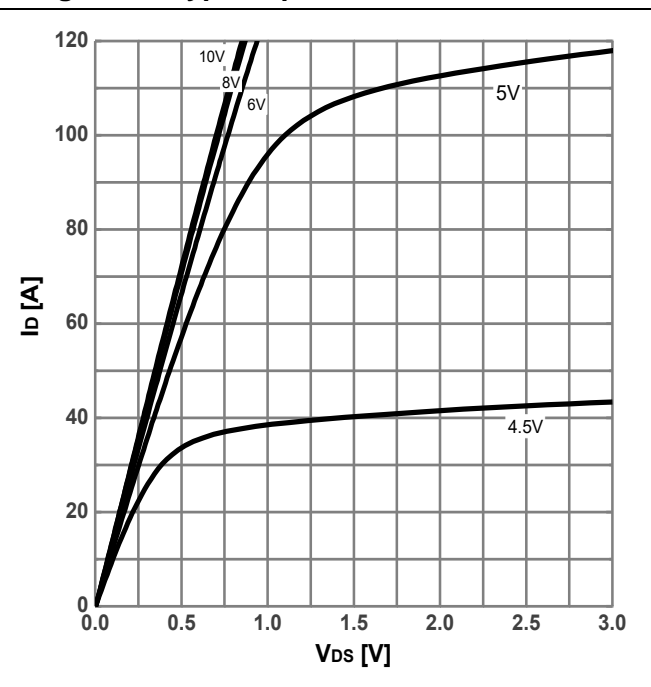
$Z_{thJC}=f(t_p)$; parameter: $D= t_p/T$

Diagram 3: Safe operating area



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

Diagram 4: Typ. output characteristics



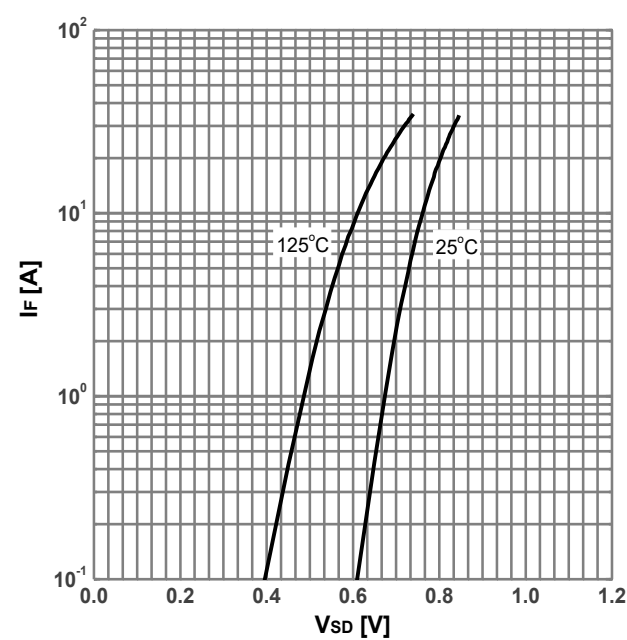
$I_D=f(V_{DS})$; $T_J=25^\circ C$; parameter: V_{GS}

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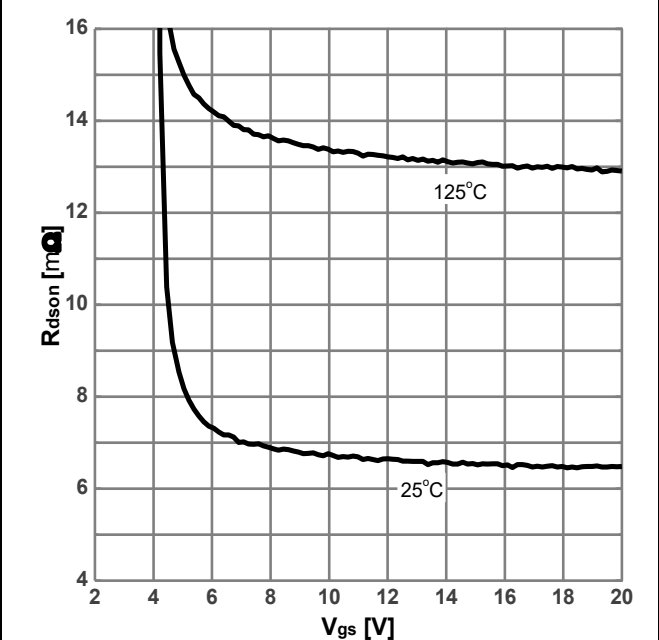
Typical Characteristics

Diagram 9: Forward characteristics of reverse diode



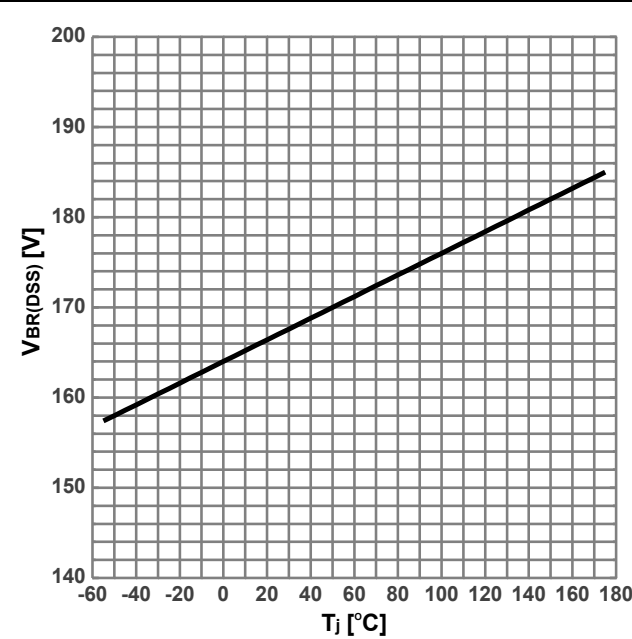
$I_F = f(V_{SD});$ parameter: T_j

Diagram 10: On state resistance vs. Vgs characteristics



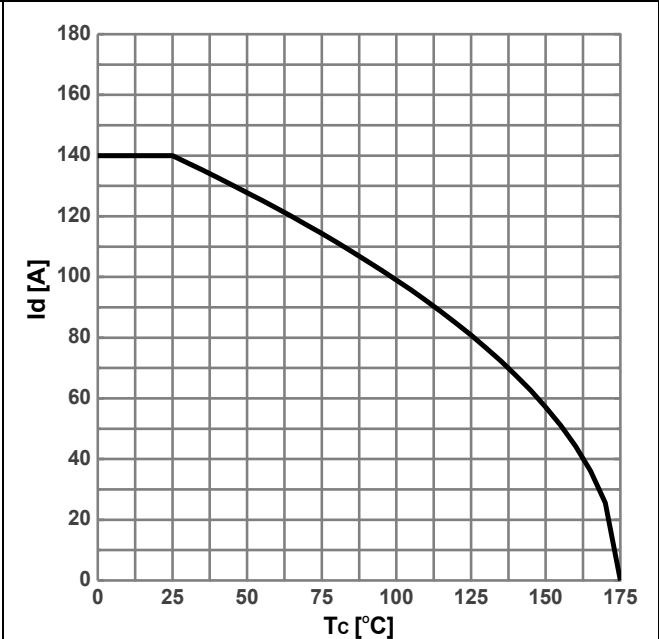
$R_{DS(on)} = f(V_{GS}); I_D = 20A;$ parameter: T_j

Diagram 11: Breakdown Voltage Variation vs. Temperature



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

Diagram 12: Maximum Drain Current

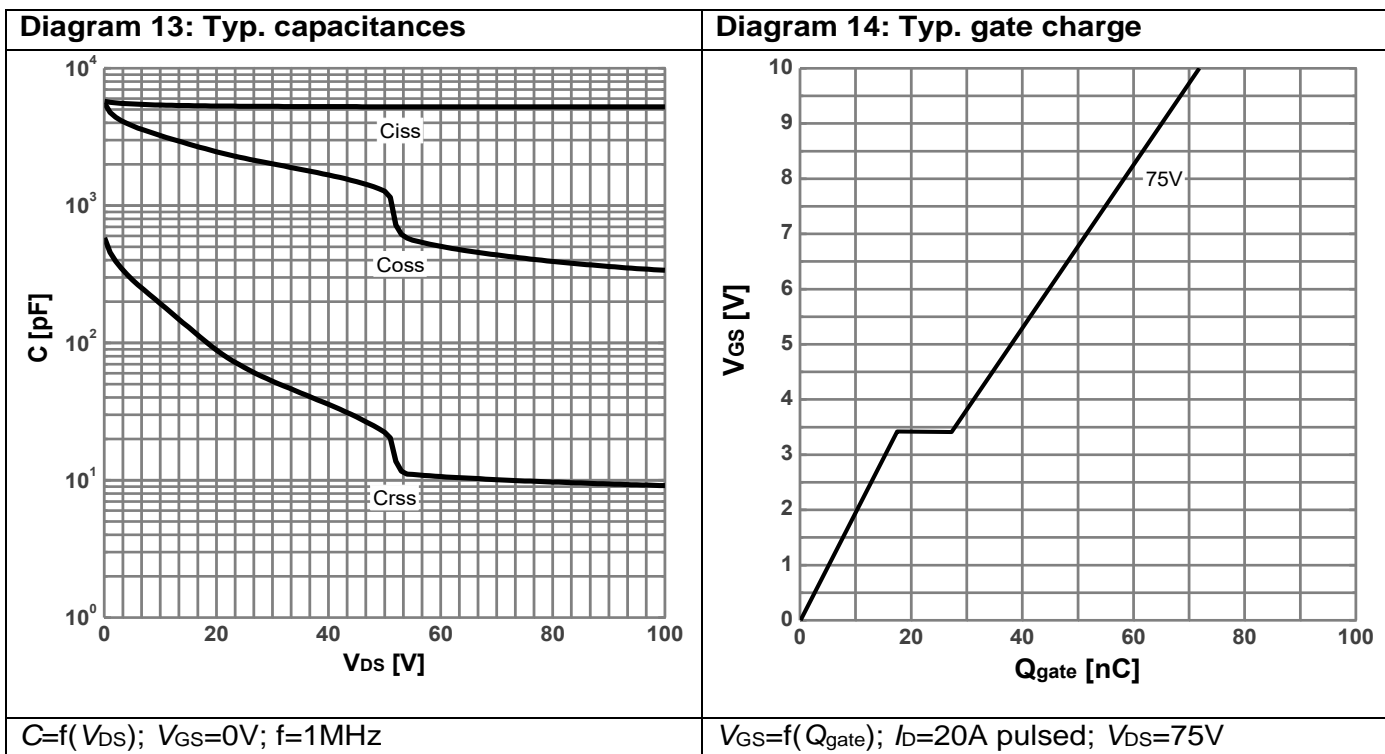


$I_D = f(T_c); V_{GS} = 10V$

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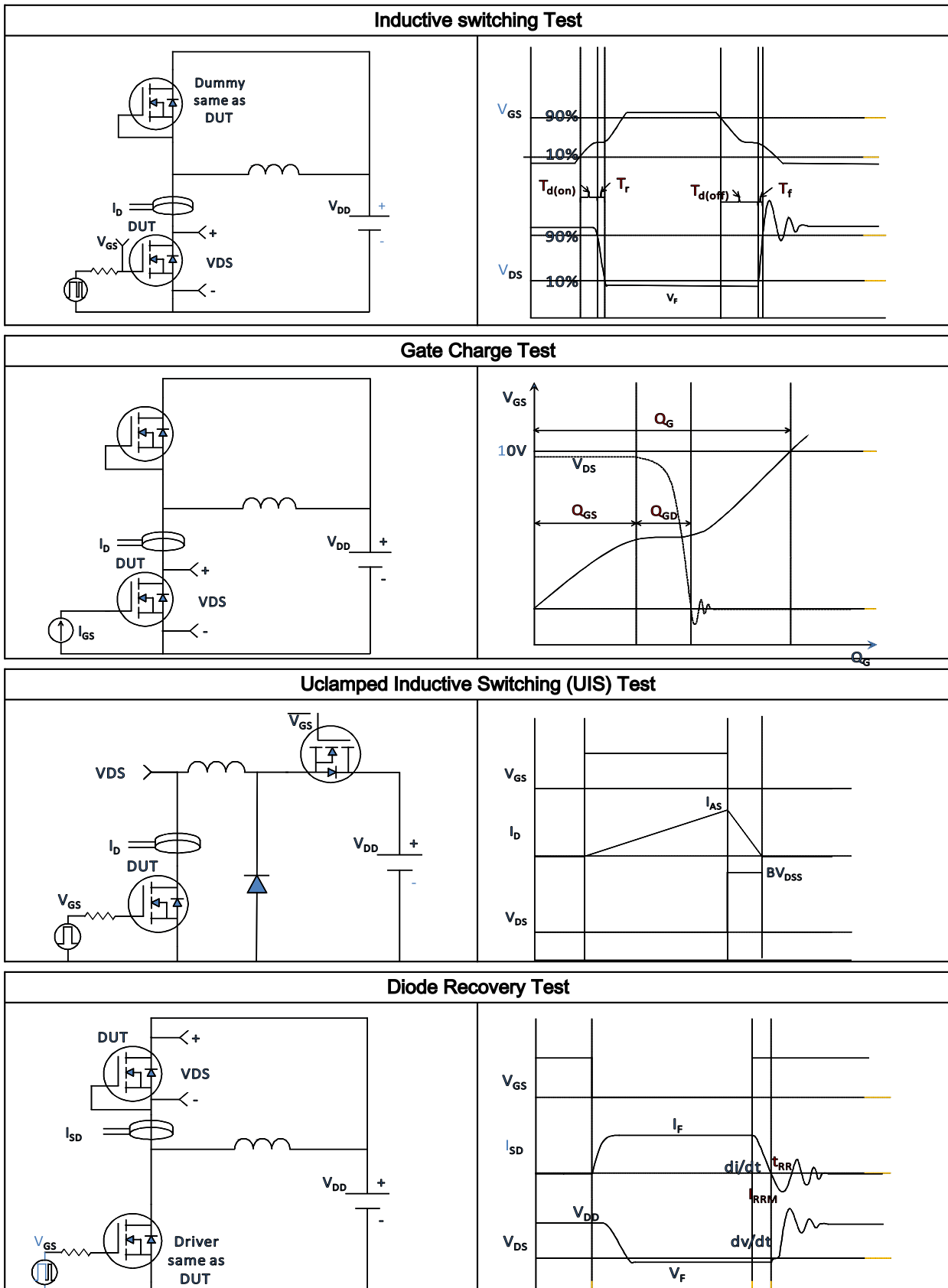
Typical Characteristics



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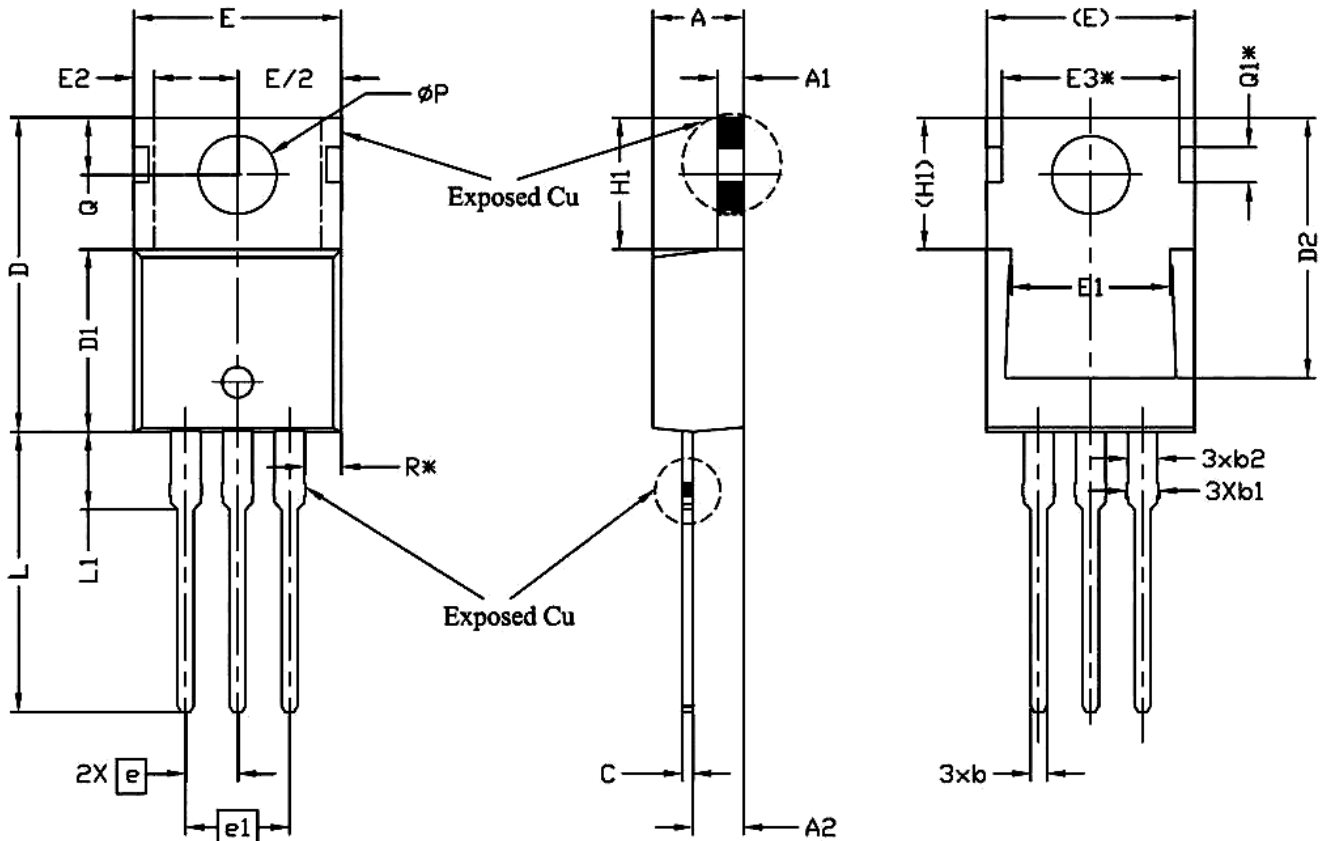
Test Circuit



TPG075N15

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	
ØP	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			