

TMG80N10NF

N-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

$V_{DS} = 100V$ $I_D = 80A$

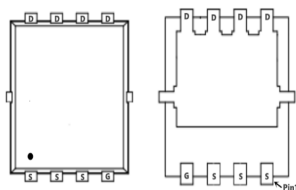
$R_{DS(ON)} = 7.3m\Omega (typ.) @ V_{GS} = 10V$

100% UIS Tested

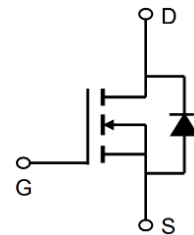
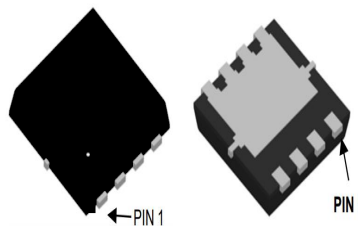
100% R_g Tested



NF:DFN5x6-8L



Marking: G80N10



Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	80	A
		$T_C = 100^\circ C$	49	A
I_{DM}	Pulsed Drain Current ^{note1}		320	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		90	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	97	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.3	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ C$

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Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	2.8	3.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =20A	-	7.3	9.0	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1.0MHz	-	2046	-	pF
C _{oss}	Output Capacitance		-	865	-	pF
C _{rss}	Reverse Transfer Capacitance		-	25	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =30A, V _{GS} =10V	-	39.4	-	nC
Q _{gs}	Gate-Source Charge		-	5.2	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	9.8	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =25A, R _G =6Ω, V _{GS} =10V	-	20	-	ns
t _r	Turn-on Rise Time		-	5.2	-	ns
t _{d(off)}	Turn-off Delay Time		-	49	-	ns
t _f	Turn-off Fall Time		-	12	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25℃, I _F =12A,dl/dt=100A/μs	-	49	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	85	-	nC

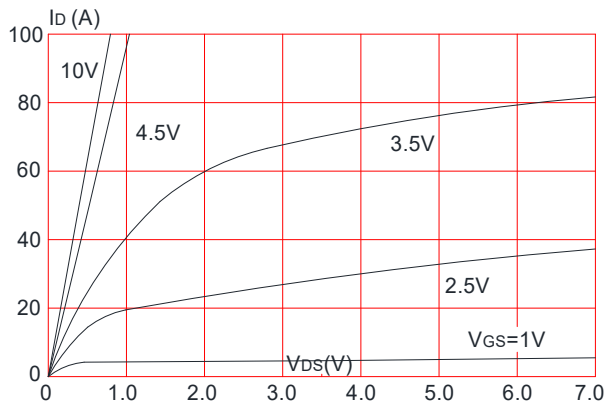
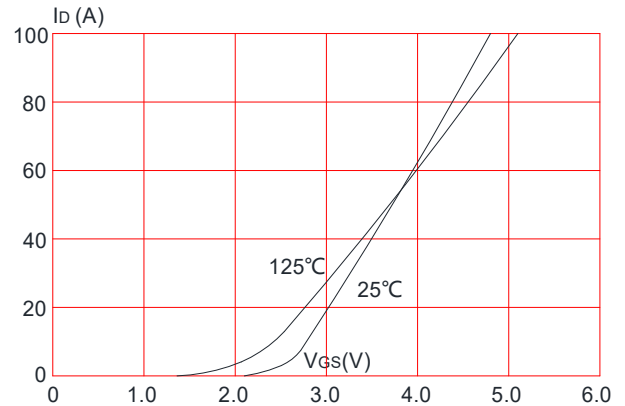
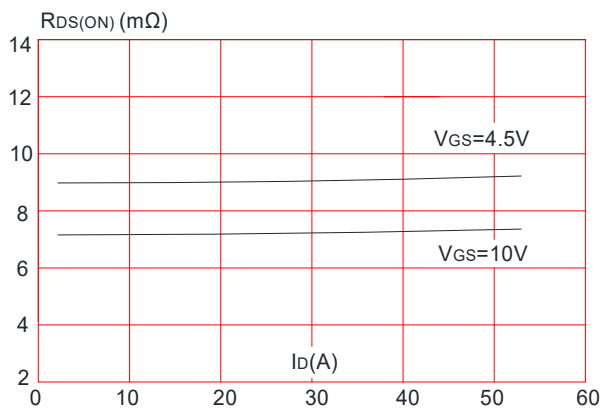
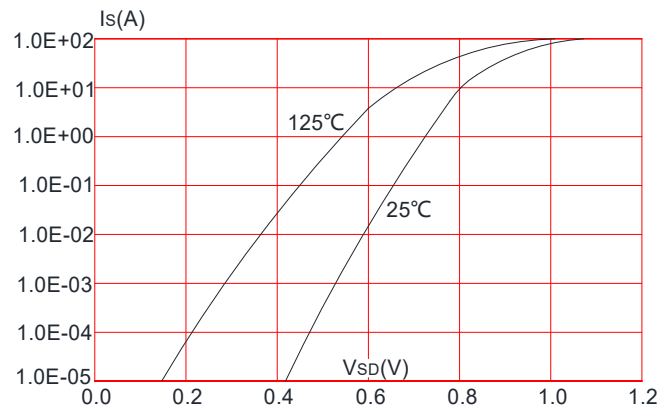
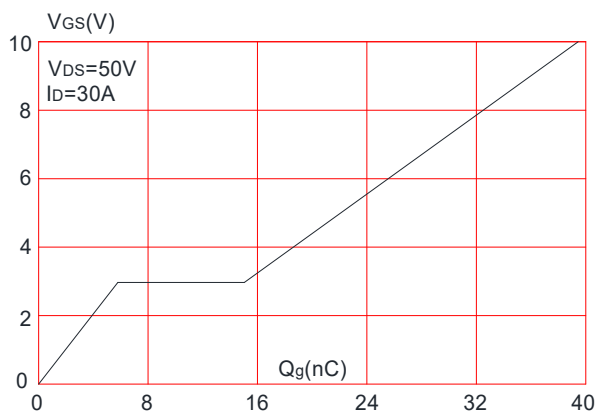
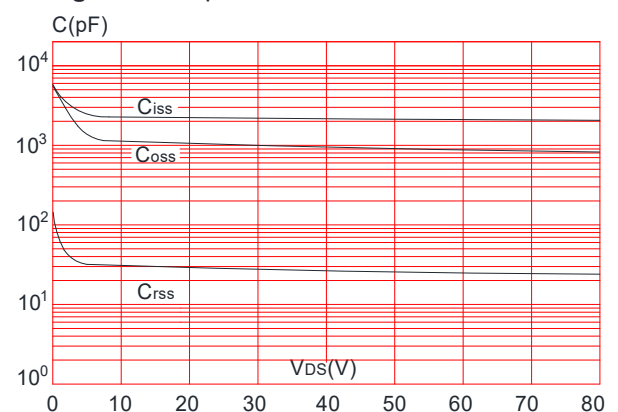
Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=50V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=19A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

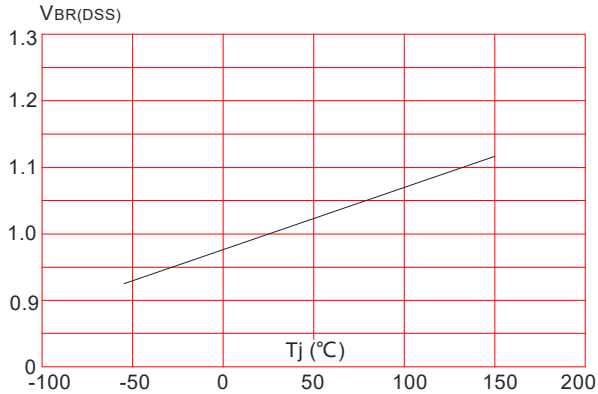
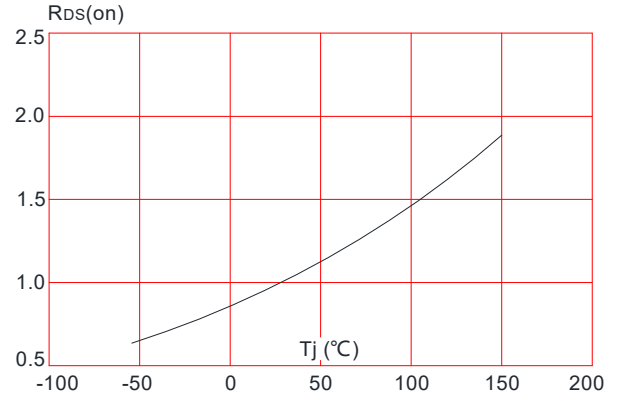
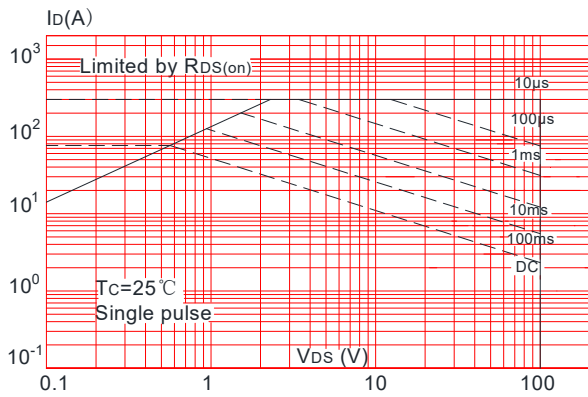
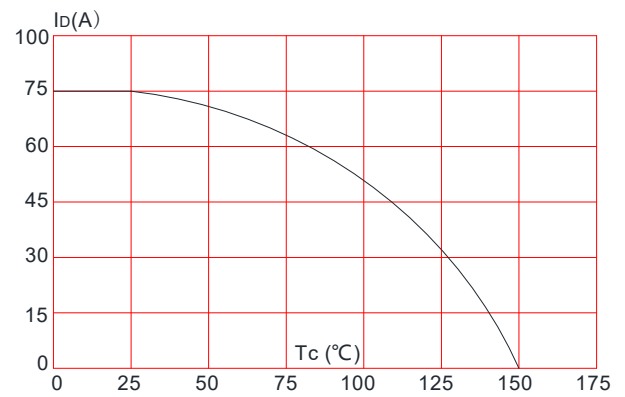
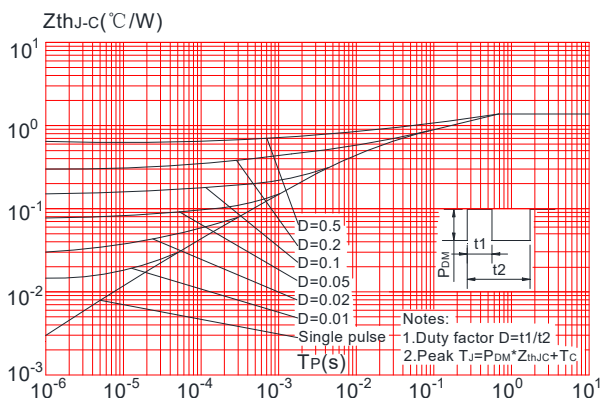


Typical Performance Characteristics

Figure 1: Output Characteristics**Figure 2: Typical Transfer Characteristics****Figure 3: On-resistance vs. Drain Current****Figure 4: Body Diode Characteristics****Figure 5: Gate Charge Characteristics****Figure 6: Capacitance Characteristics**



N-Channel Enhancement Mosfet

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**Figure 8:** Normalized on Resistance vs. Junction Temperature**Figure 9:** Maximum Safe Operating Area**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

Test Circuit

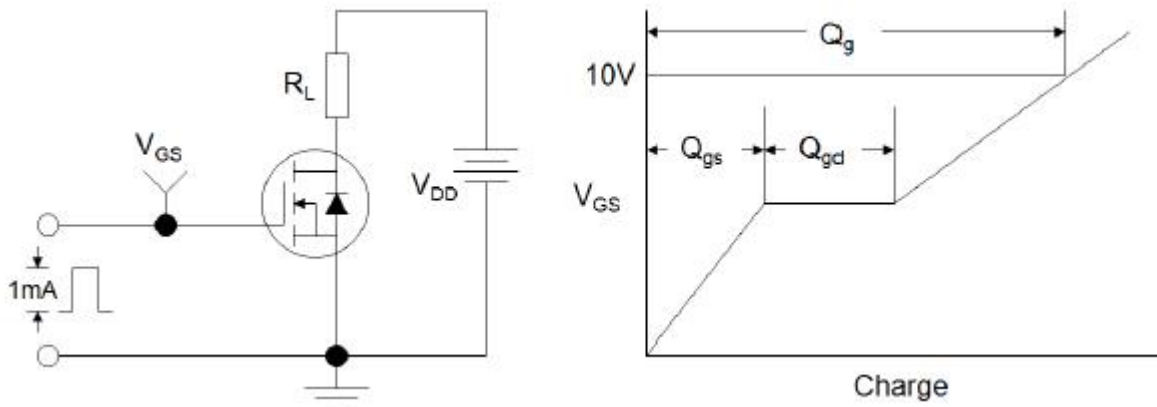


Figure1:Gate Charge Test Circuit & Waveform

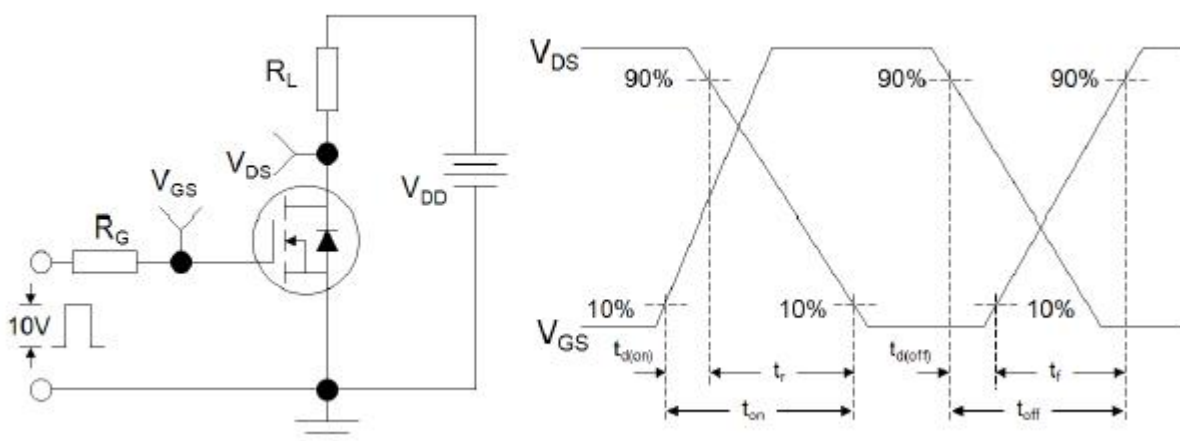


Figure 2: Resistive Switching Test Circuit & Waveforms

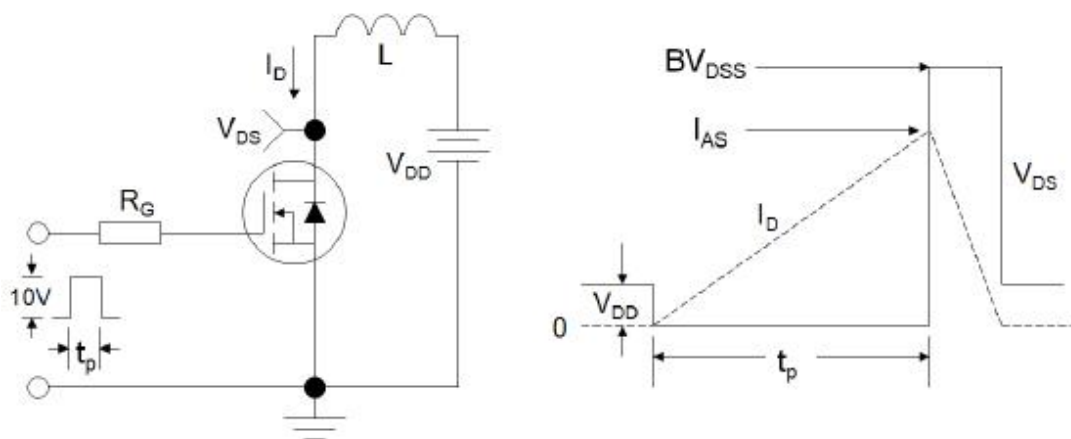
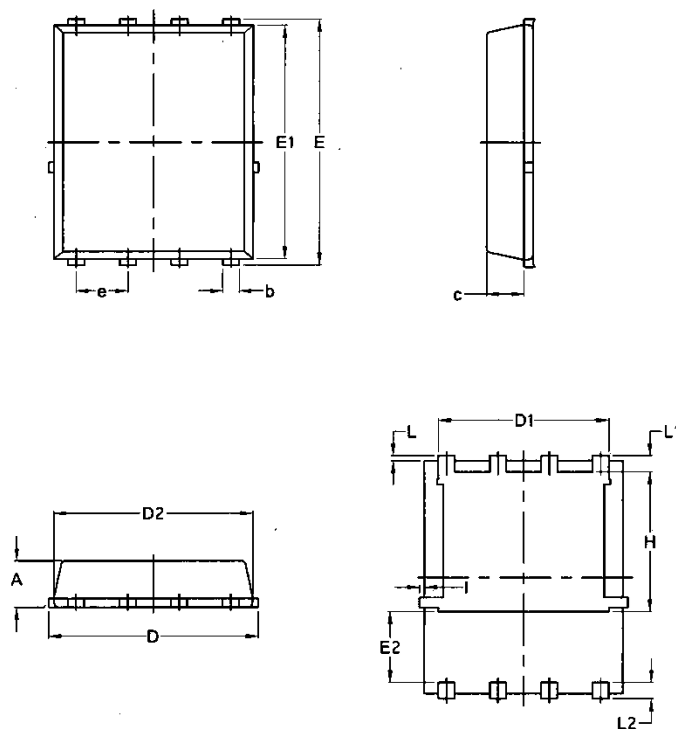


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data:DFN5x6-8L



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070