

TP30H80G

N-Channel Enhancement Mofet

Feature

30V,70A

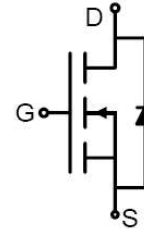
$R_{DS(ON)} < 6m\Omega @ V_{GS}=10V$

$R_{DS(ON)} < 12m\Omega @ V_{GS}=4.5V$

Advanced Trench Technology

Lead free product is acquired

Excellent $R_{DS(ON)}$ and Low Gate Charge



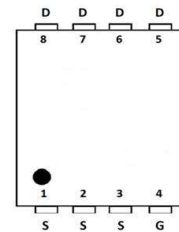
Schematic Diagram

Application

PWM applications

Load Switch

Power management



Marking and pin Assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
30H80Q	TP30H80Q	PDFN3X3-8L	13 inch	-	5000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a=25^{\circ}C$)	I_D	70	A
Continuous Drain Current ($T_a=100^{\circ}C$)	I_D	46	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	280	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	56	mJ
Power Dissipation	P_D	46	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	2.72	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ 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	30	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V,V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =30A	-	4.8	6.0	mΩ
		V _{GS} =4.5V, I _D =20A	-	7.5	12	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz	-	1614	-	pF
Output Capacitance	C _{oss}		-	245	-	
Reverse Transfer Capacitance	C _{rss}		-	215	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =15V, I _D =30A, V _{GS} =10V, R _G =3Ω	-	7.5	-	ns
Turn-on rise time	t _r		-	14.5	-	
Turn-off delay time	t _{d(off)}		-	35.2	-	
Turn-off fall time	t _f		-	9.6	-	
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V	-	33.7	-	nC
Gate-Source Charge	Q _{gs}		-	8.5	-	
Gate-Drain Charge	Q _{gd}		-	7.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =1A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	70	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: $T_J = 25^{\circ}\text{C}, V_{DD} = 15V, R_G = 25\Omega, L = 0.5mH, I_{AS} = 15A$
3. Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. Surface Mounted on FR4 Board, $t \leq 10$ sec

Typical Performance Characteristics

Figure1: Output Characteristics

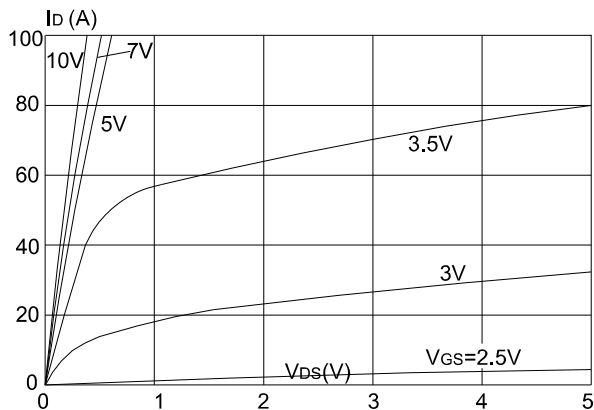


Figure 2: Typical Transfer Characteristics

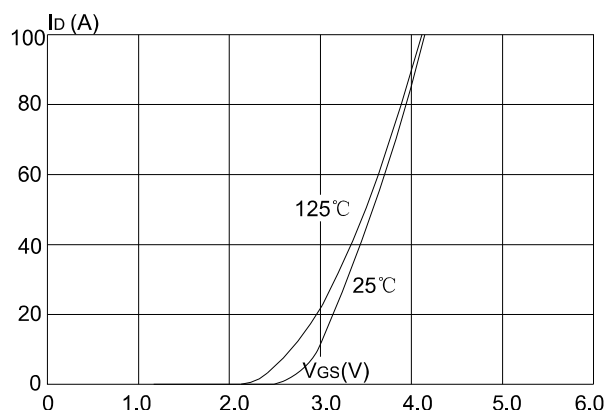


Figure 3: On-resistance vs. Drain Current

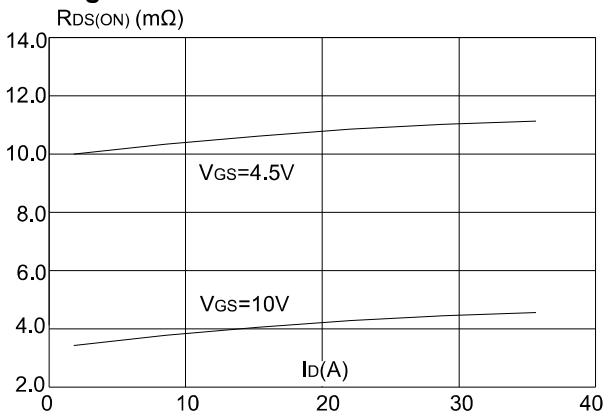


Figure 4: Body Diode Characteristics

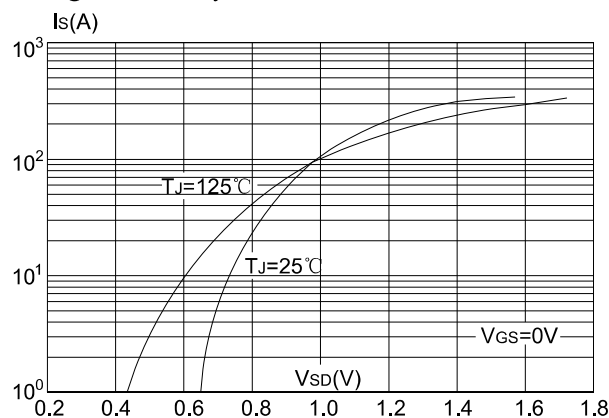


Figure 5: Gate Charge Characteristics

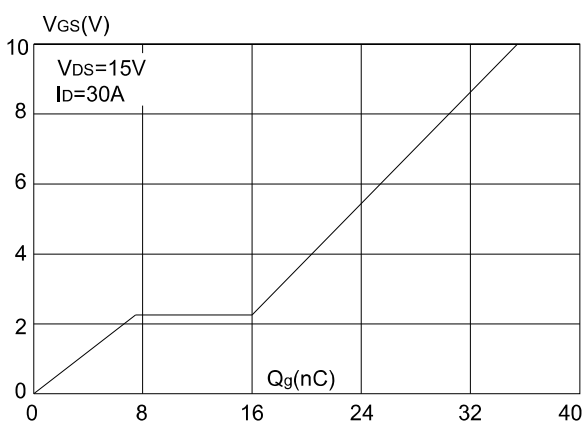


Figure 6: Capacitance Characteristics

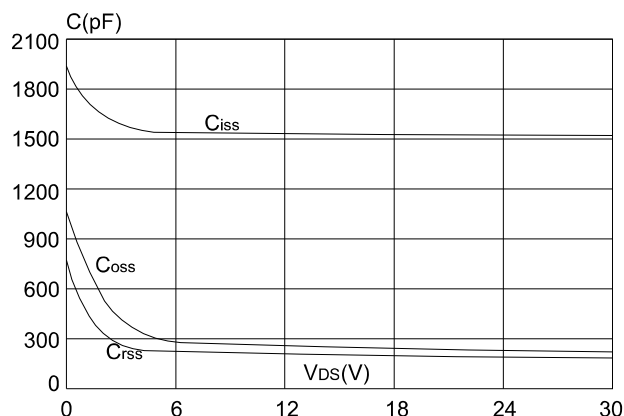


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

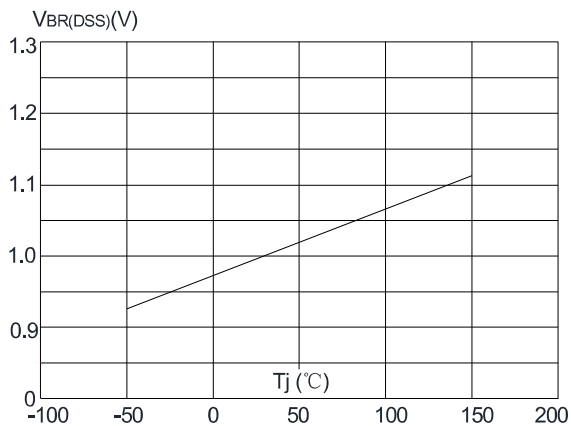


Figure 8: Normalized on Resistance vs. Junction Temperature

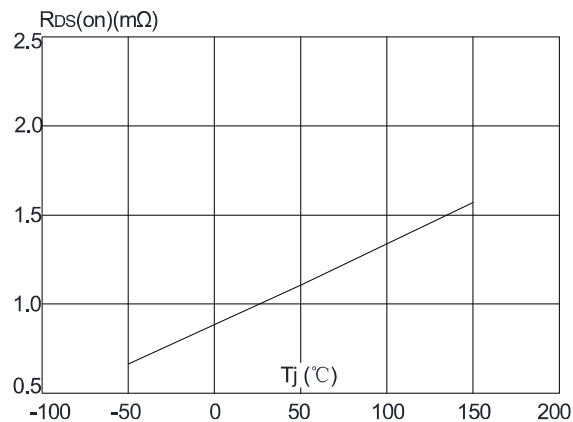


Figure 9: Maximum Safe Operating Area

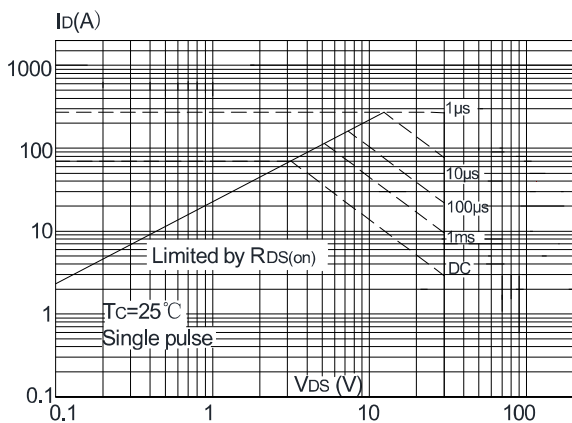


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

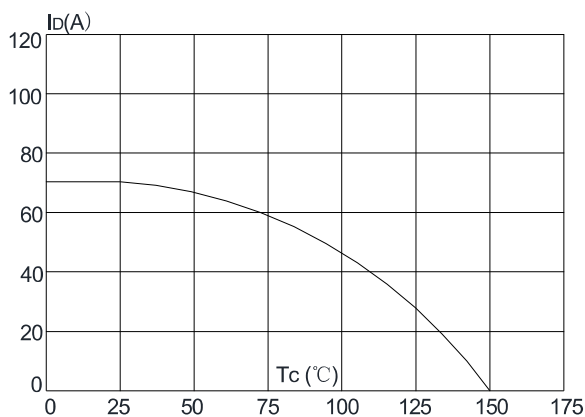
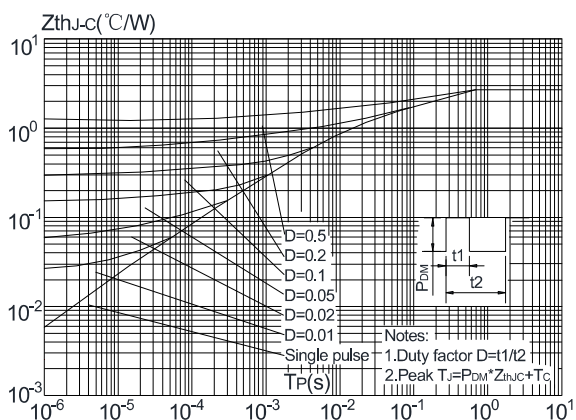


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

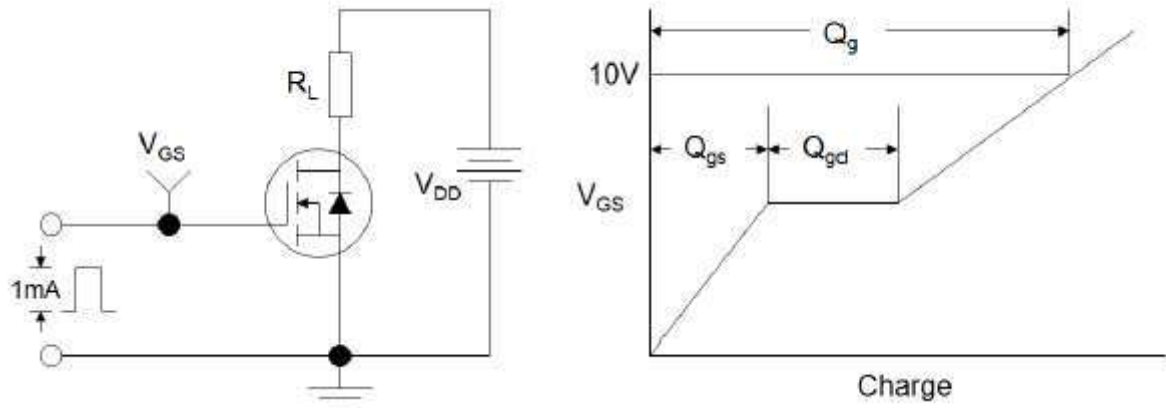


Figure1:Gate Charge Test Circuit & Waveform

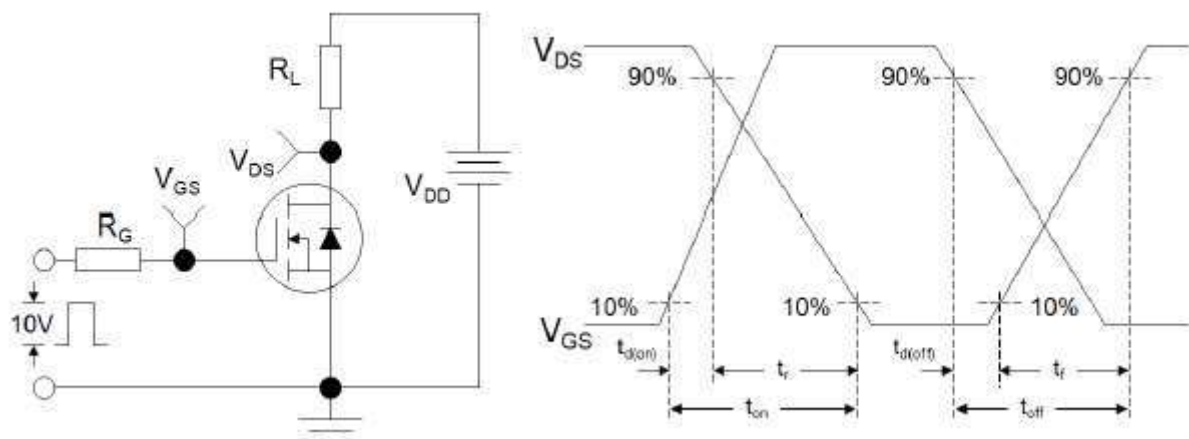


Figure 2: Resistive Switching Test Circuit & Waveforms

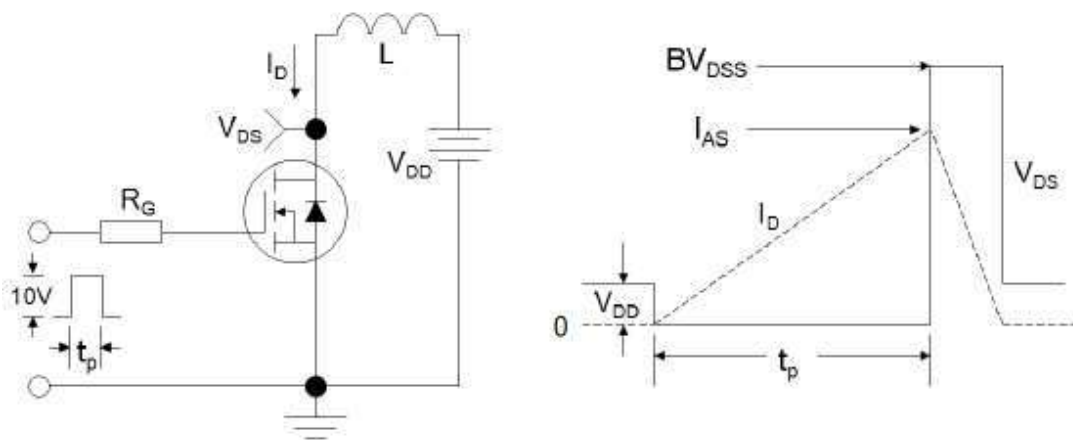


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

PDFN3X3-8L Package Information

