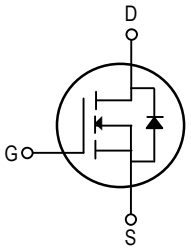
PTP12HN06/PTY12HN06

60V/120A N-Chnnel MOSFET

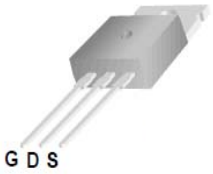
Features

- 60V/120A
  RDS(ON)=4.2m**Ω(typ.)**@ VGS=10V
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current
- 100% Avalanche Tested

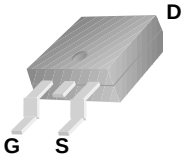


Application

- Power Supply
- DC-DC Converters
- UPS
- Battery Management System



TO-220



TO-263

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Maximum	Unit
V_{DSS}	Drain-to-Source Voltage		60	V
V_{GSS}	Gate-to-Source Voltage		±25	V
I_D[3]	Continuous Drain Current	T_C=25°C	120	A
		T_C=100°C	80	
I_{DP}[4]	Pulsed Drain Current	T_C=25°C	480	
EAS[5]	Avalanche energy		684	mJ
PD	Maximum Power Dissipation	T_C=25°C	188	W
T_J, T_{STG}	Junction & Storage Temperature Range		-55~175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
Rθjc	Thermal Resistance-Junction to Case	0.67	℃/W
Rθja	Thermal Resistance-Junction to Ambient	62.5	

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,V_{GS}=0V	—	—	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	—	—	±100	nA
$R_{DS(on)}$[1]	Drain-Source On-Resistance	V_{GS}=10V, I_D=60A	—	4.2	5.6	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}[1]	Diode Forward Voltage	I_{SD}=60A,V_{GS}=0V	—	0.8	1.3	V
I_S[3]	Diode Continuous Forward Current		—	—	60	A
t_{rr}	Reverse Recovery Time	I_F=60A,dI/dt=100A/u	—	32	—	nS
Q_{rr}	Reverse Recovery Charge	s	—	60	—	nC
Dynamic Characteristics[2]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}30 V Frequency=1MHz	—	3130	—	pF
C_{oss}	Output Capacitance		—	521	—	
C_{rss}	Reverse Transfer Capacitance		—	304	—	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=30V,I_D=60A, V_{GS}=10V,R_G=5Ω	—	21	—	nS
t_r	Rise Time		—	56	—	
$t_{d(off)}$	Turn-Off Delay Time		—	53	—	
t_f	Fall Time		—	27	—	
Gate Charge Characteristics[2]						
Q_g	Total Gate Charge	V_{DS}=48V,V_{GS}=10V I_D=60A	—	76	—	nC
Q_{gs}	Gate-to-Source Charge		—	18	—	
Q_{gd}	Gate-to-Drain Charge		—	31	—	

Note: 1: Pulse test; pulse width ≦ 300us, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.
3: Package limitation current is 60A.Calculated continuous current based on maximum allowable junction temperature.
4: Repetitive rating, pulse width limited by max junction temperature.
5: Starting TJ = 25°C,L = 0.5mH,IAS = 37A.

Typical Characteristics

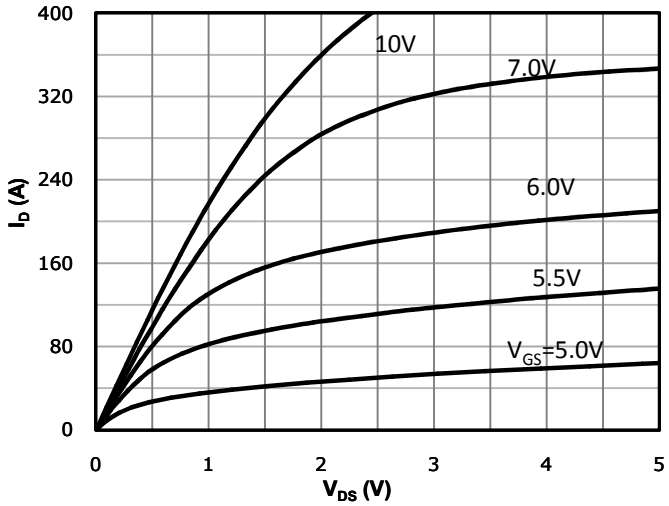


Fig 1: Output Characteristics

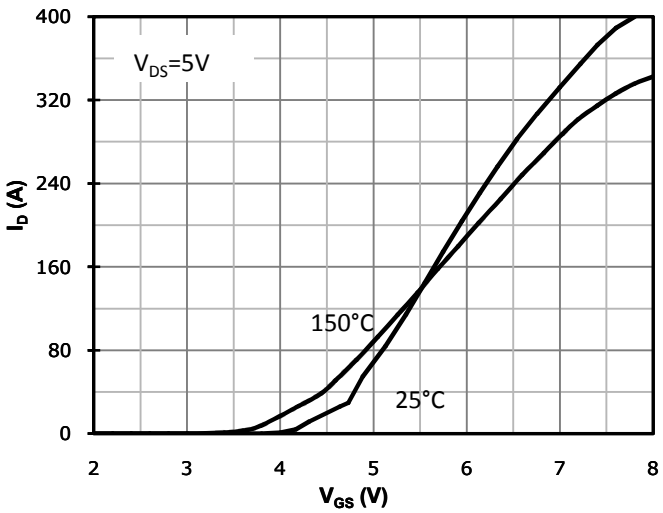


Fig 2: Transfer Characteristics

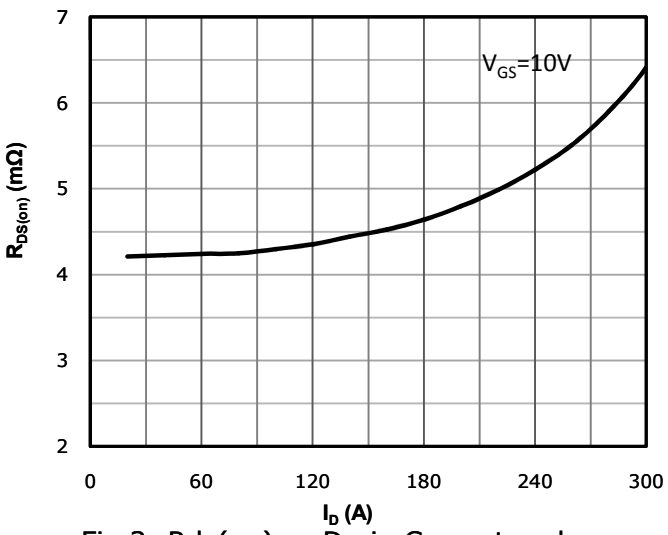


Fig 3: Rds(on) vs Drain Current and Gate Voltage

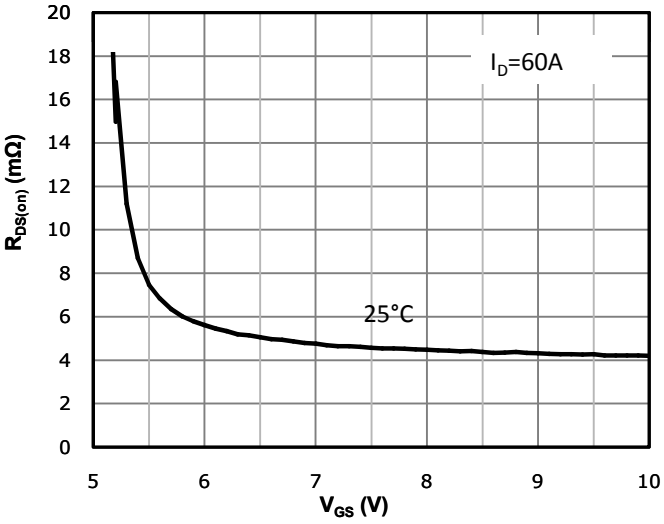


Fig 4: Rds(on) vs Gate Voltage

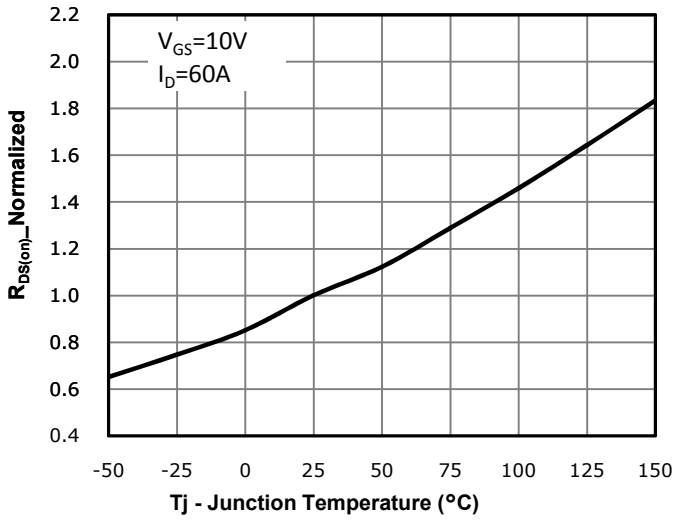


Fig 5: Rds(on) vs. Temperature

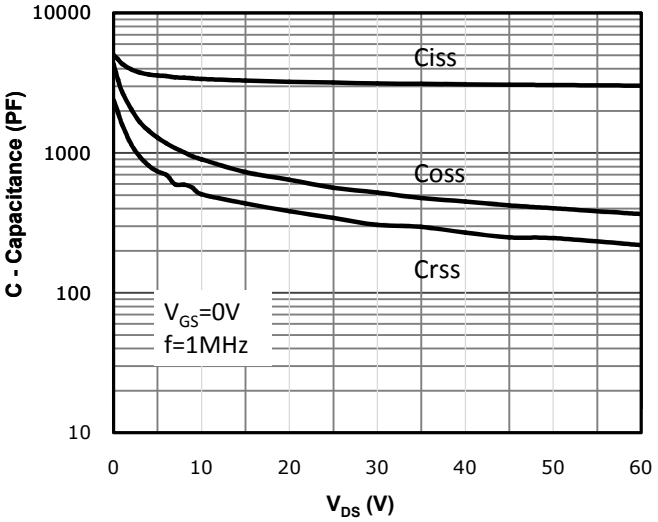


Fig 6: Capacitance Characteristics

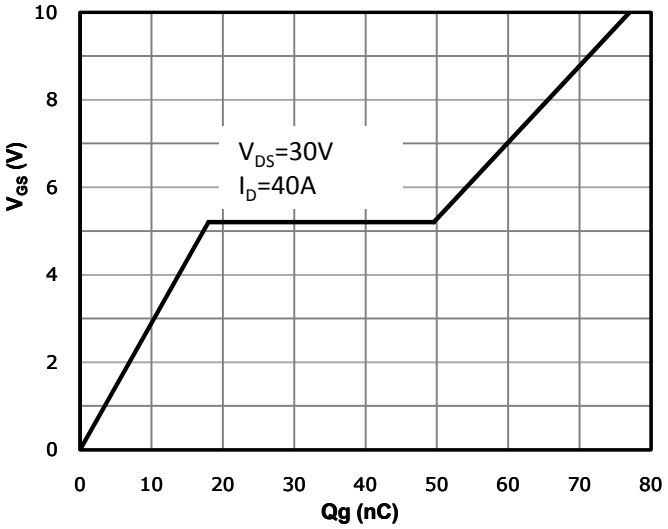


Fig 7: Gate Charge Characteristics

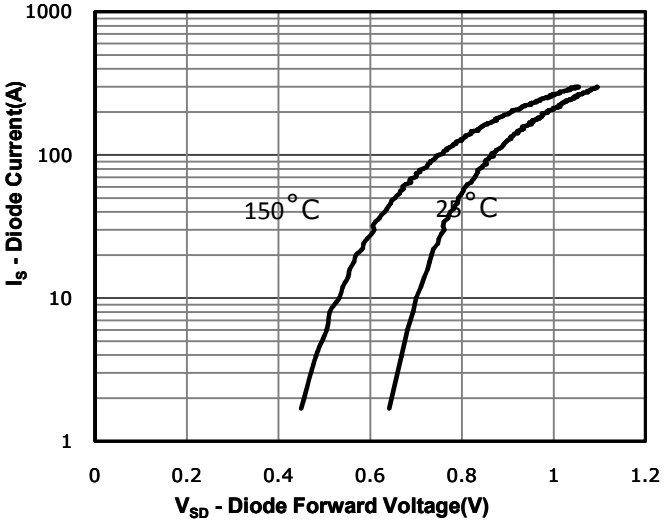


Fig 8: Body-diode Forward Characteristics

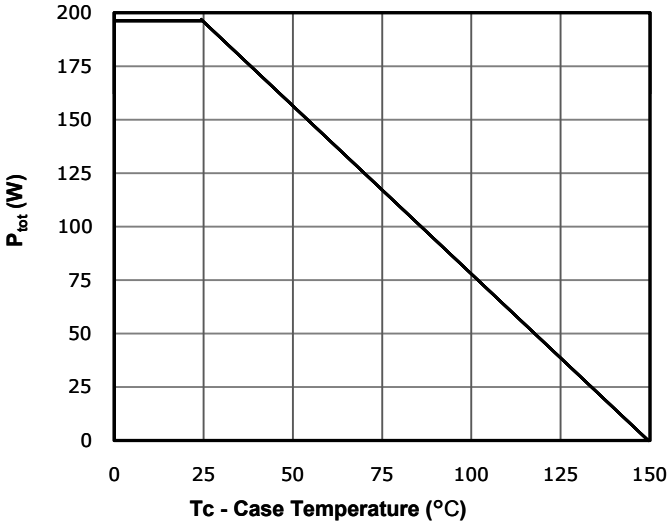


Fig 9: Power Dissipation

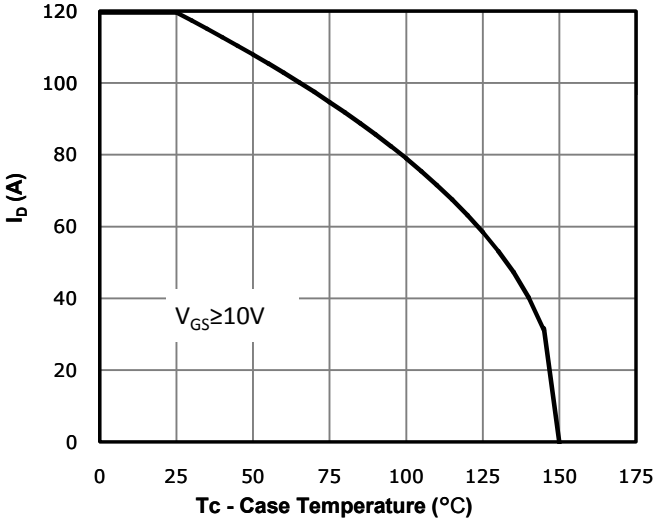


Fig 10: Drain Current Derating

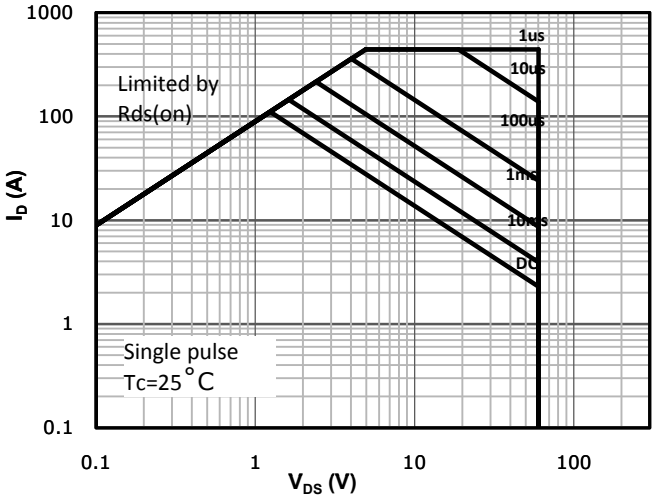
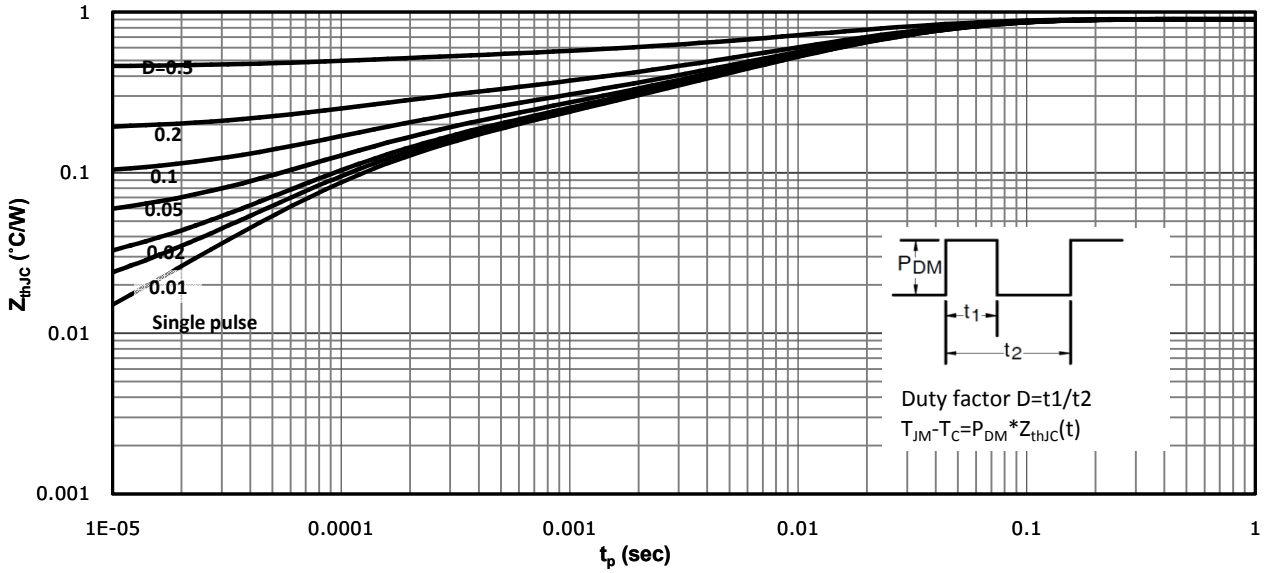


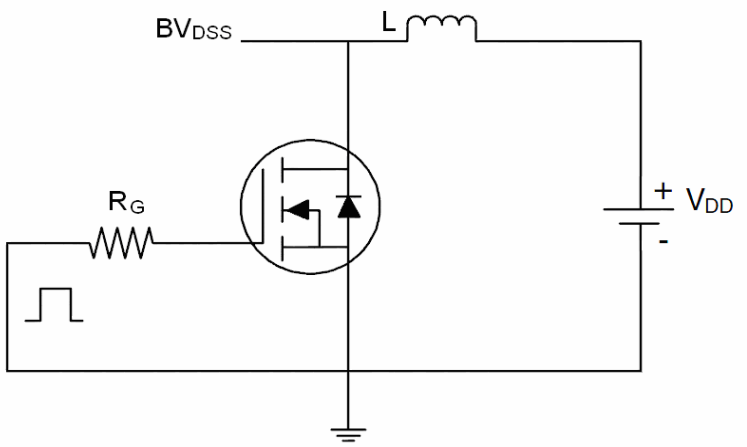
Fig 11: Safe Operating Area

Fig 12: Max. Transient Thermal Impedance

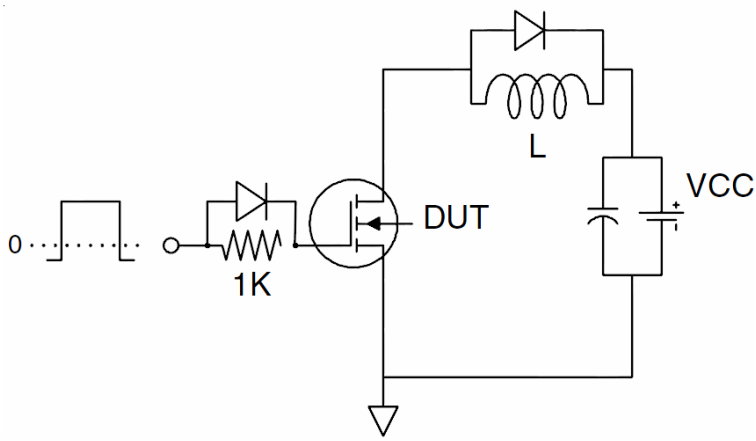


Test Circuit

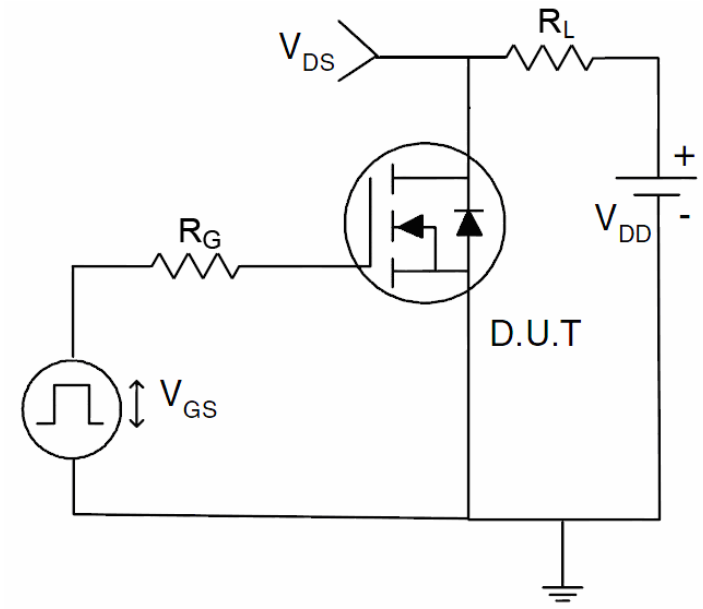
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



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