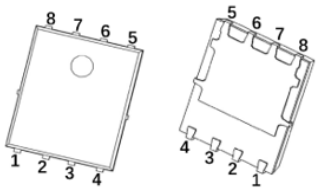
GPT017N06NNCU

60V N-Channel MOSFET

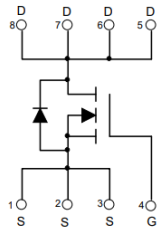
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.7mΩ@10V	160A

PDFN5X6-8L



Schematic diagram



Feature

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

MARKING:

T017N06N U = Device Code

XX = Date Code

Solid Dot = Green Indicater

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	60	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	160	A
	T_C = 100℃	I_D	104	A
Pulsed Drain Current[2]		I_{DM}	640	A
Single Pulsed Avalanche Current[3]		I_{AS}	64	A
Single Pulsed Avalanche Energy[3]		E_{AS}	1024	mJ
Power Dissipation[5]	T_C = 25℃	P_D	113	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	50	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.1	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.6	4	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		1.7	2.3	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 30V, V_{GS} = 0V, f = 0.1MHz		5348		pF
Output Capacitance	C_{oss}			1282		
Reverse Transfer Capacitance	C_{rss}			75		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 0.1MHz		2.8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 30V, V_{GS} = 10V, I_D = 20A		89		nC
Gate-source Charge	Q_{gs}			20		
Gate-drain Charge	Q_{gd}			21		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 30V, V_{GS} = 10V, I_D= 20A, R_G = 3Ω		19		ns
Turn-on Rise Time	t_r			21		
Turn-off Delay Time	$t_{d(off)}$			44		
Turn-off Fall Time	t_f			24		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 20A			1.2	V

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

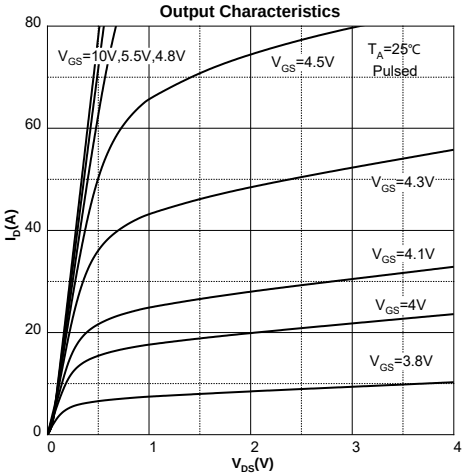
3.E_{AS} condition: V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

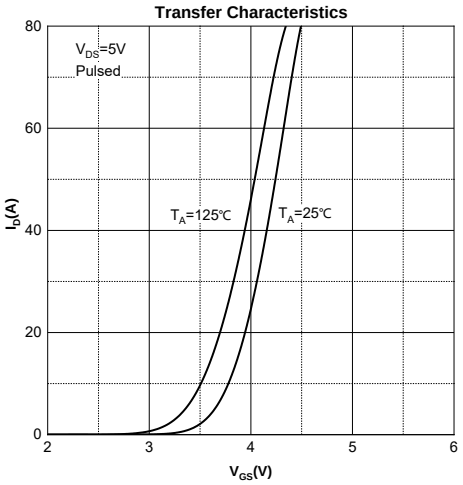
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

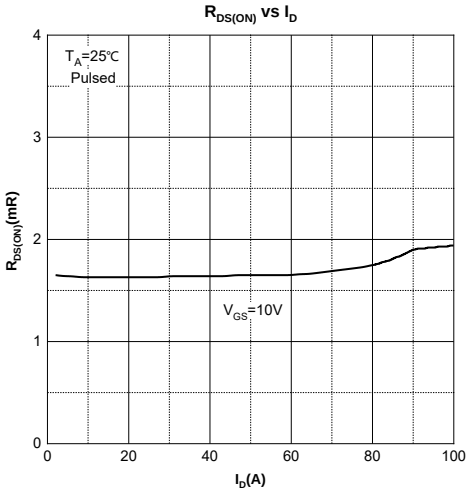
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

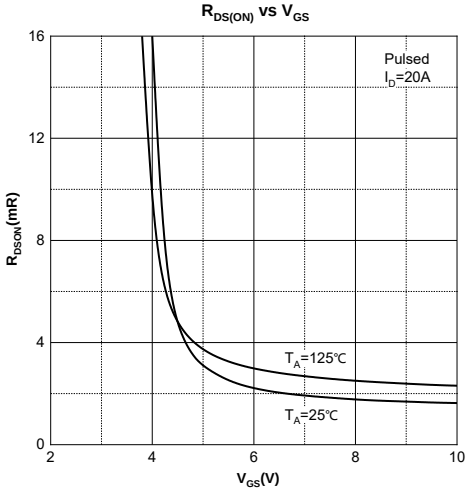
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

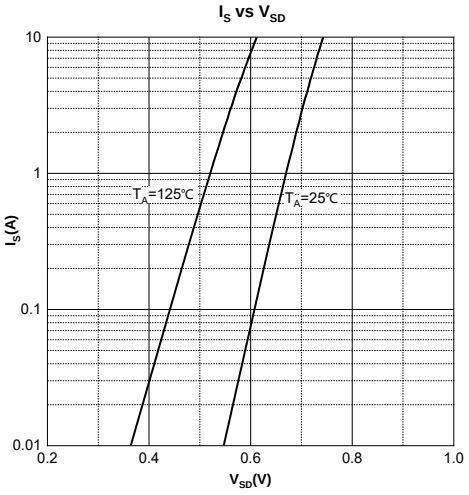
Typical Characteristics

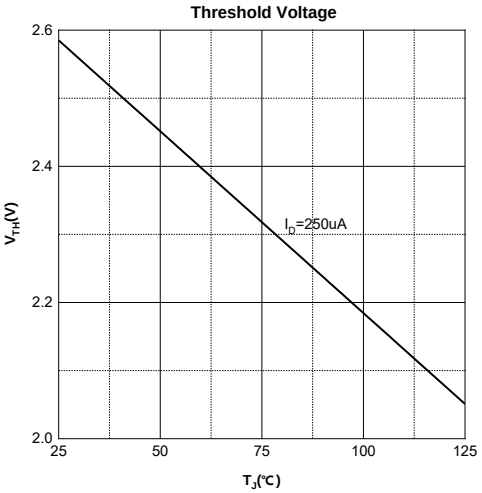


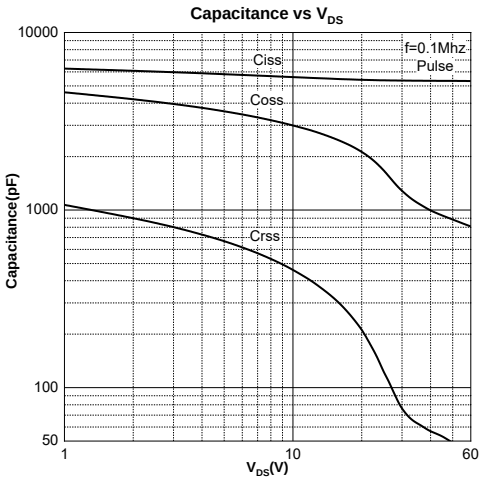


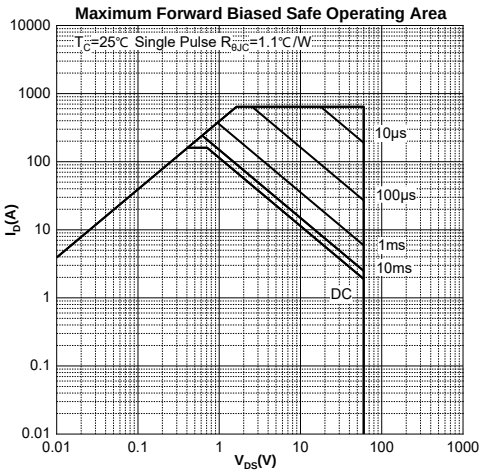


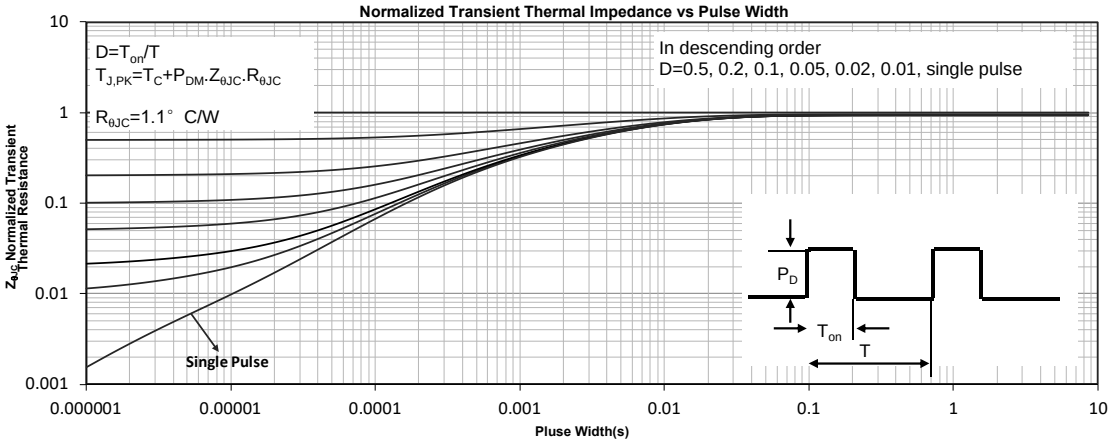




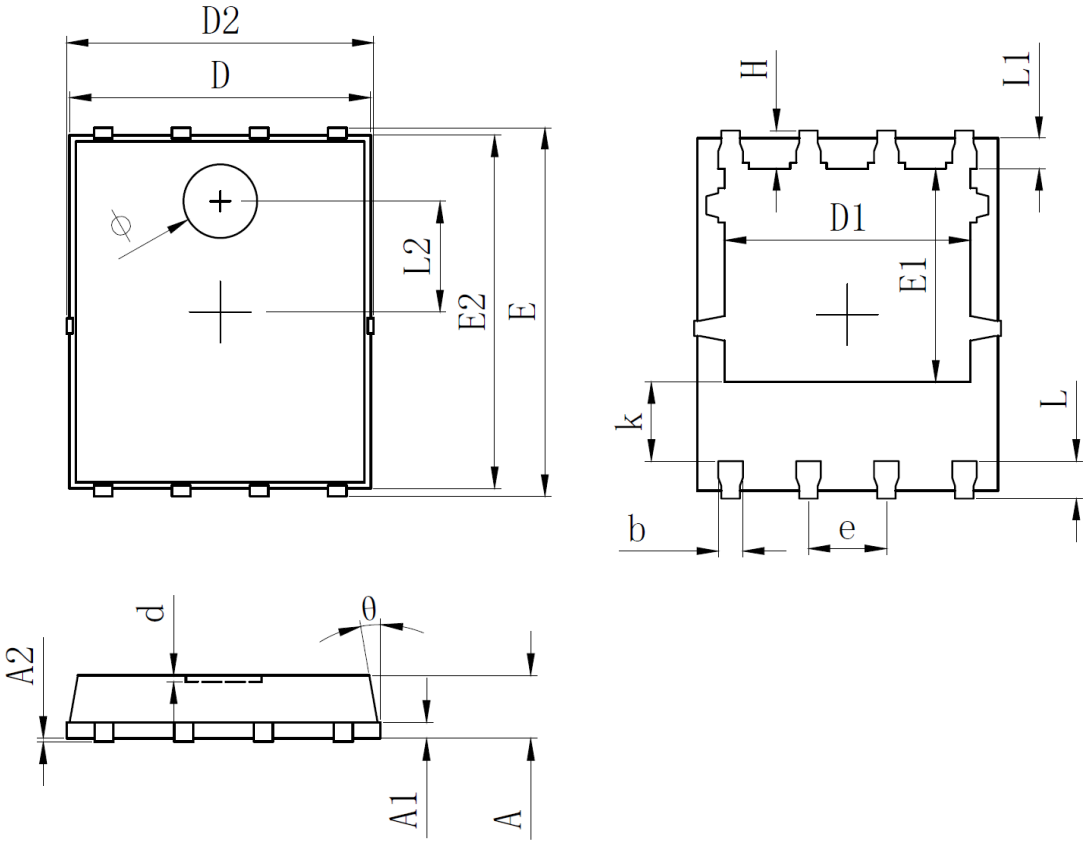



Capacitance vs V_{DS}
Ciss
Coss
Crss
f=0.1Mhz
Pulse
Capacitance(pF)
V_{DS}(V)


Maximum Forward Biased Safe Operating Area
T_C=25℃ Single Pulse $R_{\theta JC}$=1.1℃/W
10μs
100μs
1ms
10ms
DC
I_D(A)
V_{DS}(V)


Normalized Transient Thermal Impedance vs Pulse Width
D=T_{on}/T
$T_{J,PK}$=T_C+P_{DM}.$Z_{\theta JC}$.$R_{\theta JC}$
$R_{\theta JC}$=1.1° C/W
In descending order
D=0.5, 0.2, 0.1, 0.05, 0.02, 0.01, single pulse
P_D
T_{on}
T
Single Pulse
$Z_{\theta JC}$ Normalized Transient Thermal Resistance
Pluse Width(s)

PDFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.254REF		0.010REF	
A2	0.000	0.050	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	3.910	4.110	0.154	0.162
D2	4.924	5.076	0.194	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
k	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
θ	8°	12°	8°	12°
Φ	1.100	1.300	0.043	0.051
d	-	0.100	-	0.004