TPG029N06G

N-Channel Enhancement Mosfet

Features

60V,160A

$R_{DS(ON)}$ <2.9mΩ @V_{GS}=10V TYP:2.4mΩ

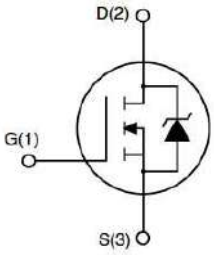
$R_{DS(ON)}$ <3.6mΩ @V_{GS}=4.5V TYP:3.0mΩ

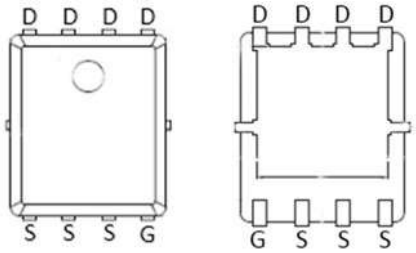
Super Trench

Extremely low on-resistance RDS(on)

Excellent Qg x RDS(on) product(FOM)

Qualified according to JEDEC criteria





PDFN5X6

Applications

Synchronous Rectification for AC/DC Quick Charger

Battery management

UPS (Uninterrupible Power Supplies)

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G029N06G	TPG029N06G	PDFN5X6	-	-	5000

ABSOLUTE MAXIMUM RATINGS (T_J=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 (Silicon Limited)	Tc=25℃	I_D	160	A
	Tc=100℃		101	A
Continuous Drain Current (Package Limited)Tc=25℃			80	A
Pulsed Drain Current		I_{DM}	640	A
Single Pulsed Avalanche Energy (Tc=25℃,L=0.3mH) (2)		E_{AS}	189	mJ
Drain Power Dissipation		P_D	113	W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.11	℃/W
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	56	℃/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
Static 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	-	0.02	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	±10	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	-	2.2	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =10V, I_D =40A	-	2.4	2.9	mΩ
		V_{GS} =4.5V, I_D =32A		3.0	3.6	mΩ
Gate Resistance	Rg	V_{GS}=0V, V_{DS} Open, f=1MHz		0.93		Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1.0MHz	-	4610	6915	pF
Output Capacitance	C_{oss}		-	2188	3282	
Reverse Transfer Capacitance	C_{rss}		-	66	132	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_D=40A, R_G=2.7Ω, V_G=10V	-	14.1	-	ns
Turn-on rise time	t_r		-	63.7	-	
Turn-off delay time	$t_{d(off)}$		-	46.8	-	
Turn-off fall time	t_f		-	105.1	-	
Total Gate Charge	Qg	V_{DS}=30V, I_D=40A, V_{GS}=10V	-	74.4	111.6	nC
Gate-Source Charge	Qgs		-	17.3	-	
Gate-Drain Charge	Qgd		-	9.5	18.9	
Source-Drain Diode characteristics						
Diode Forward voltage[a]	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=40A	-	0/82	1.23	V
Diode Forward current	I_S	T_C=25℃	-	-	160	A
Body Diode Reverse Recovery Time	trr	T_J=25℃，IF=40A,di/dt=300A/us		52.8	105.6	ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃，IF=440A,di/dt=300A/us		253	56.3	nc

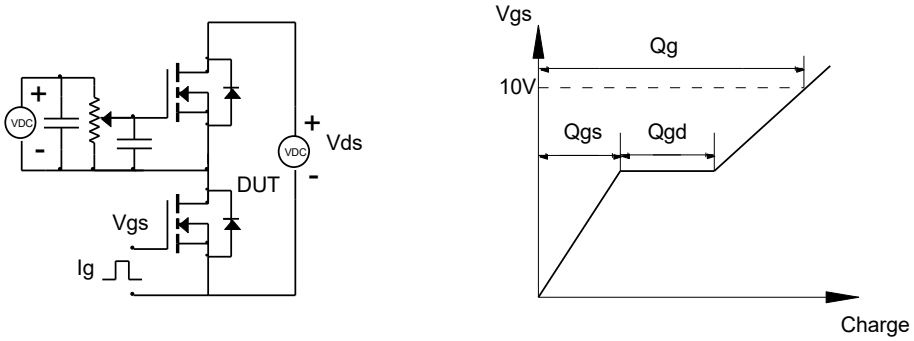
Notes:

a) Pulse width ≤ 300 μs, duty cycle ≤ 2%

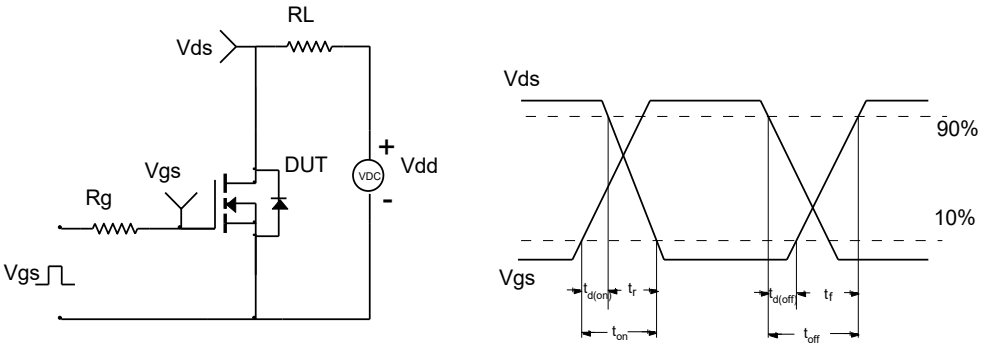
b) Guaranteed by design, not subject to production testing

Test Circuit

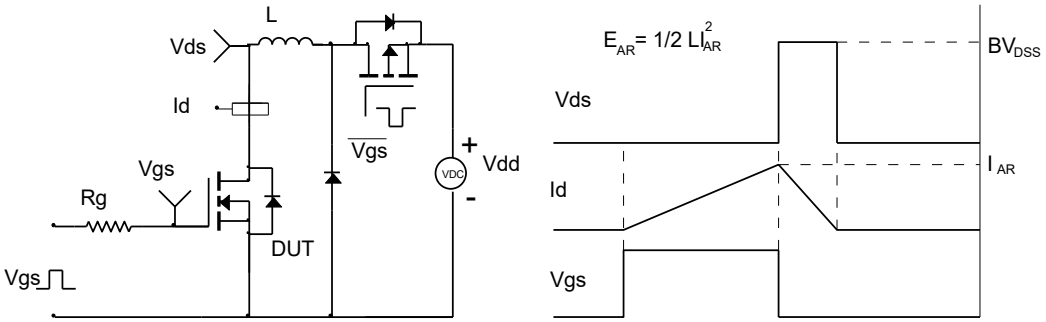
Gate Charge Test Circuit & Waveform



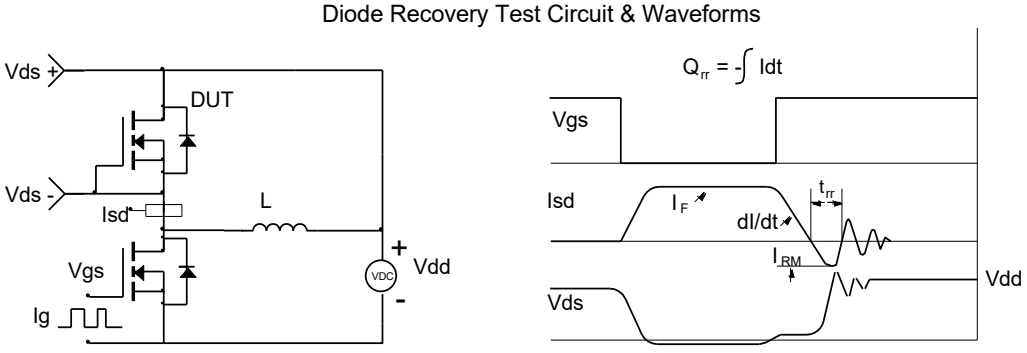
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig 1: Output Characteristics

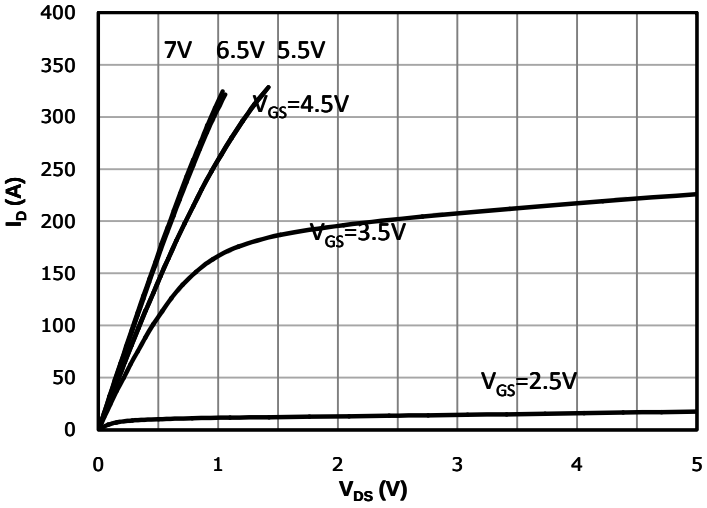


Fig 2: Transfer Characteristics

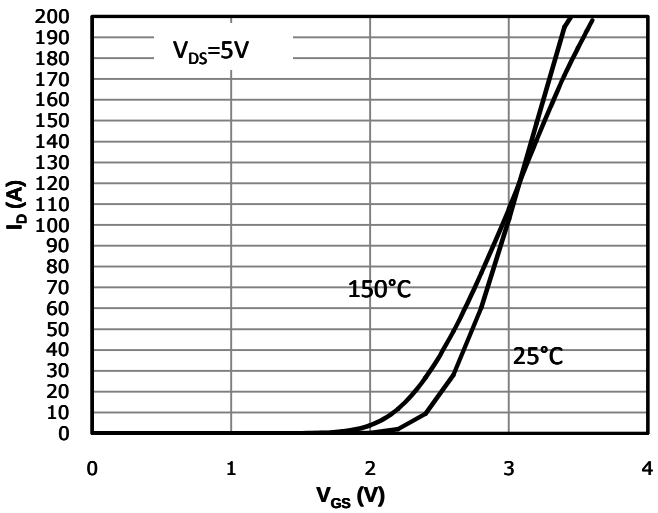


Fig 3: Rds(on) vs Drain Current and Gate Voltage

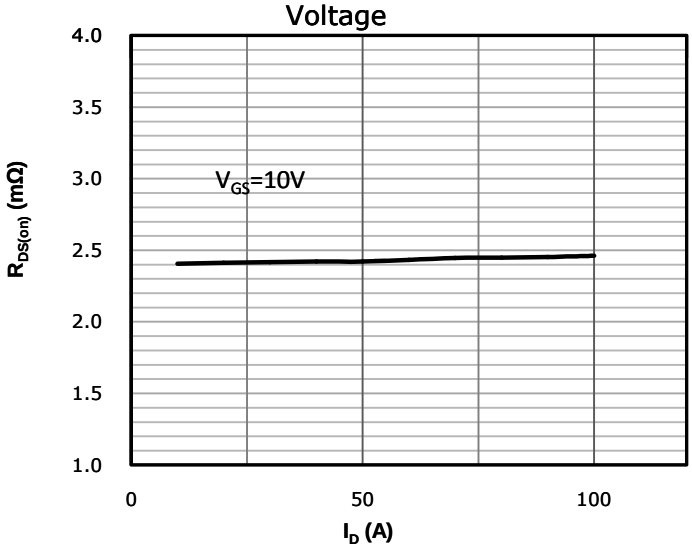


Fig 4: Rds(on) vs Gate Voltage

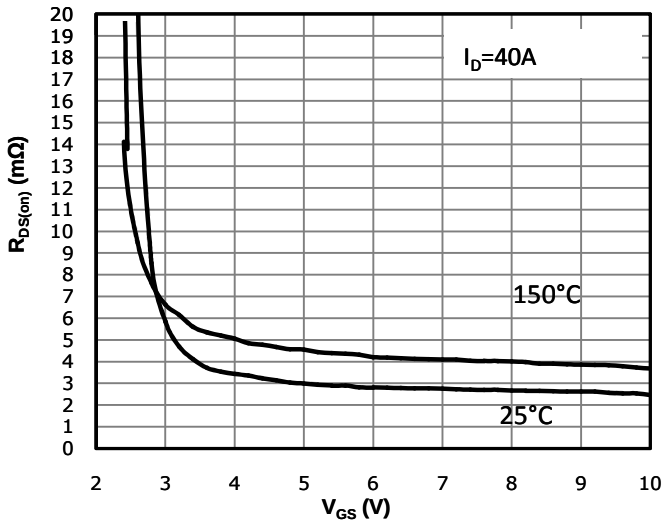


Fig 5: Rds(on) vs. Temperature

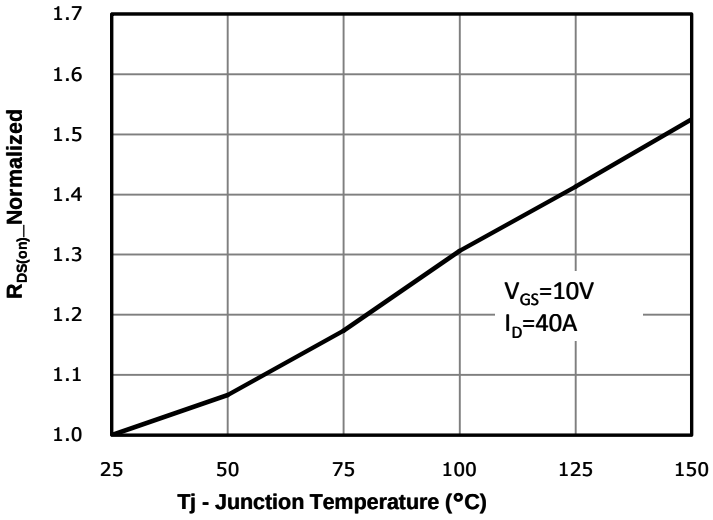
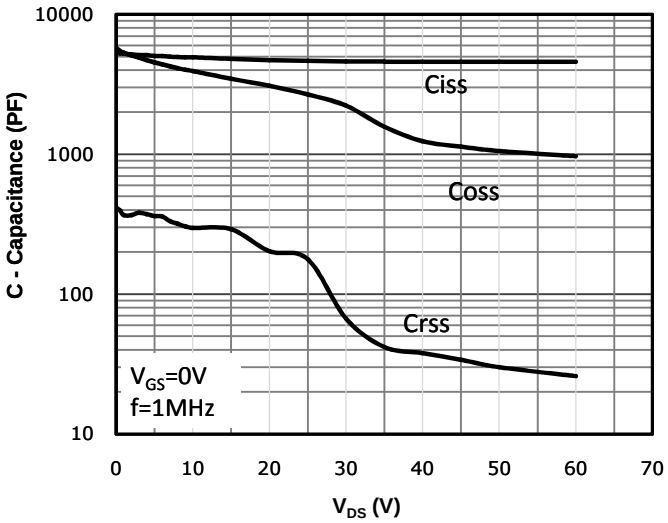


Fig 6: Capacitance Characteristics



Typical Performance Characteristics

Fig 7: Gate ChargeCharacteristics

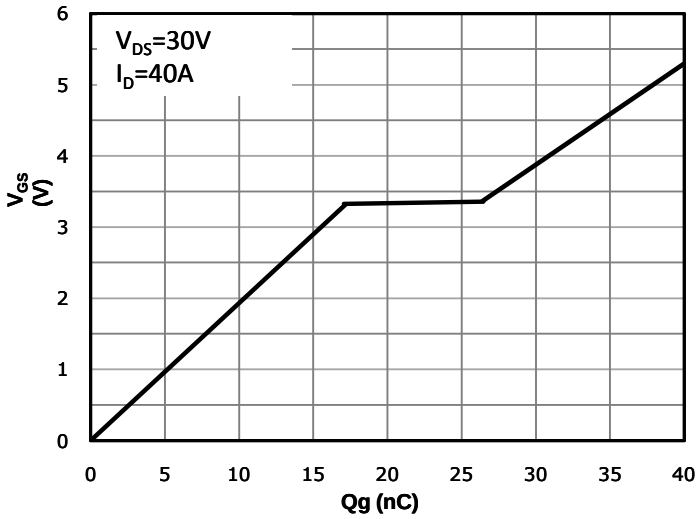


Fig 8: Body-diode Forward Characteristics

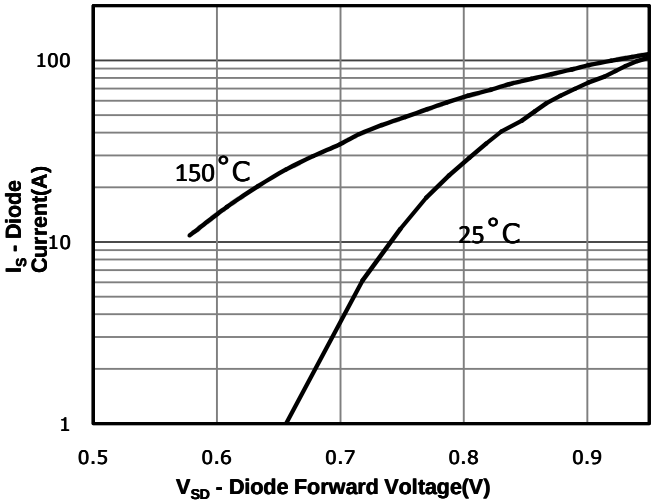


Fig 9: Power Dissipation

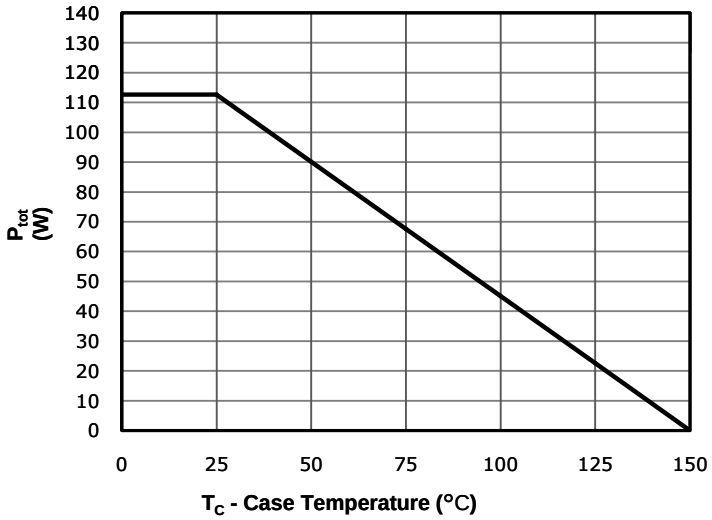


Fig 10: Drain Current Derating

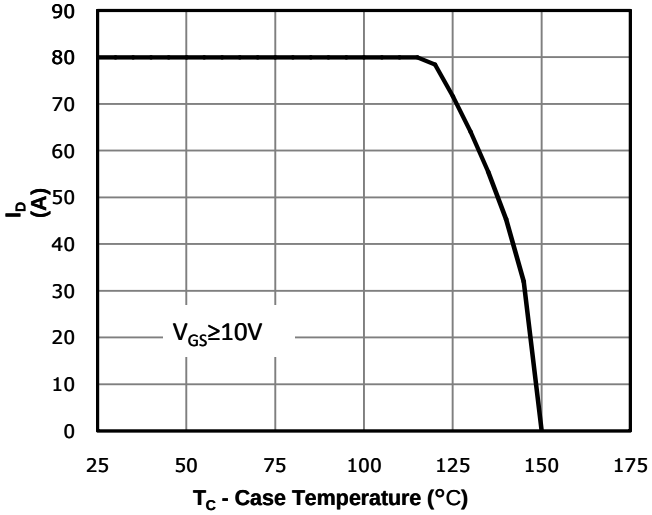
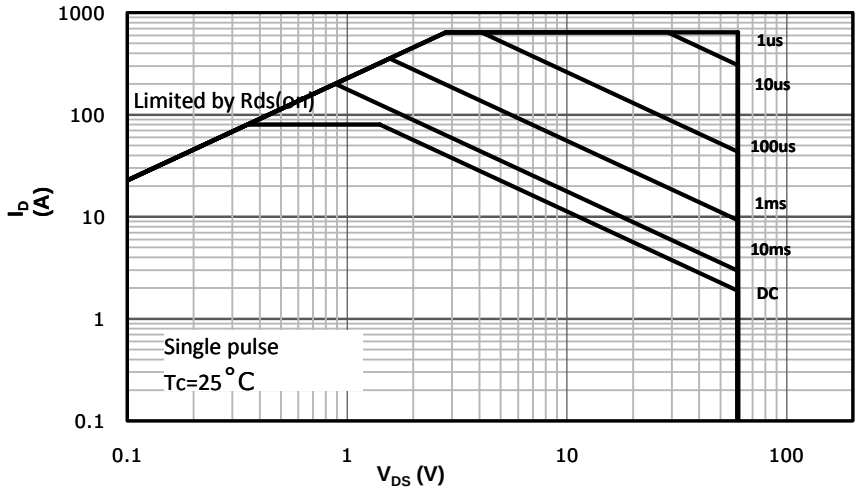
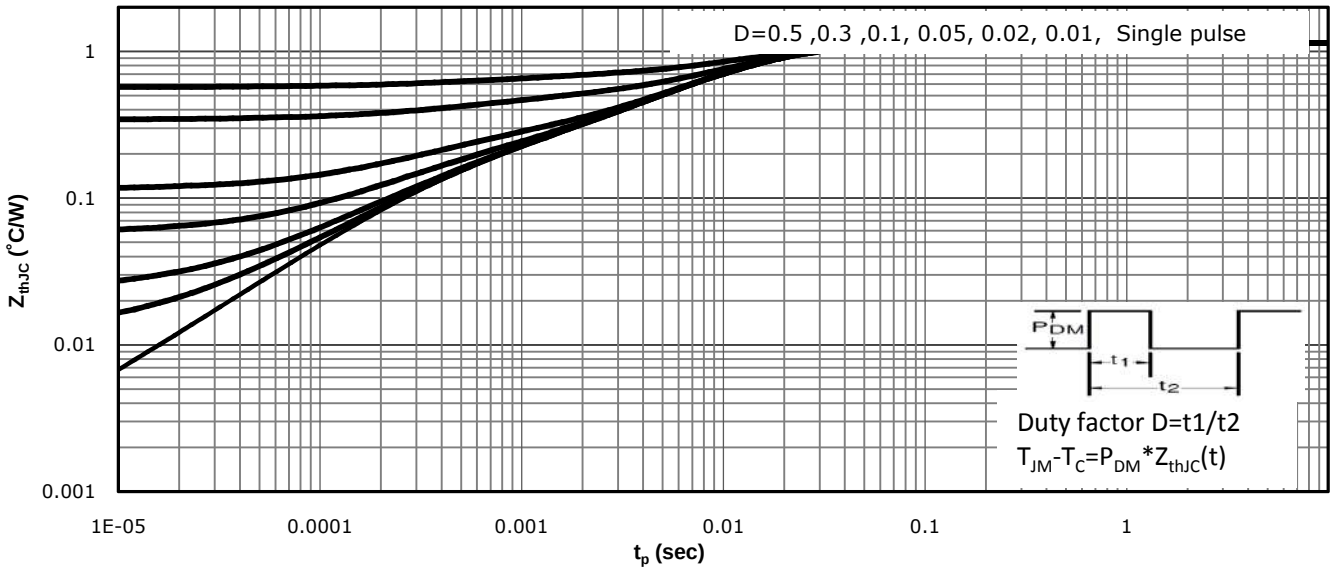


Fig 11: Safe Operating Area

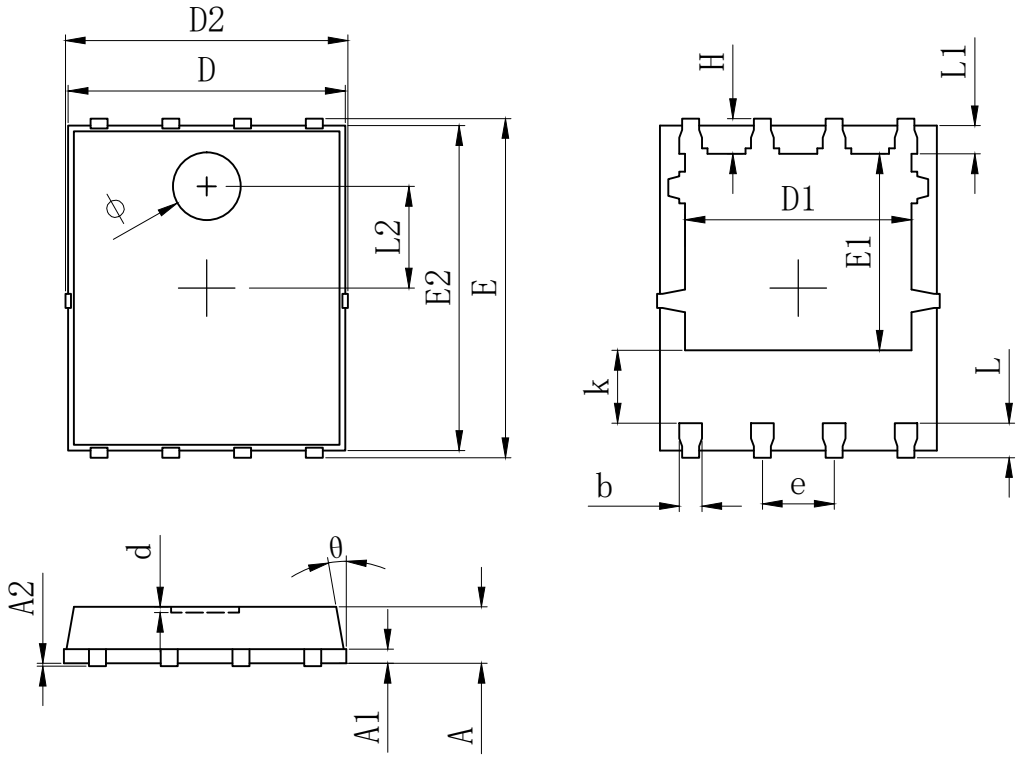


Typical Performance Characteristics

Fig 12: Max. Transient Thermal Impedance



PDFN5X6 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100