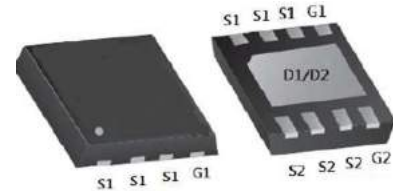


Features

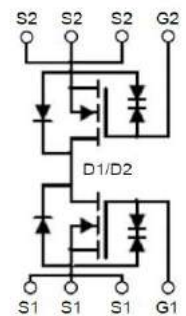
- Dual N-Channel
- Battery Power Systems
- Good stability and uniformity
- UPS
- It is ESD protected
- 100% avalanche tested

V_{DS}	18	V
$R_{DS(on),TYP@ V_{GS}=4.5V}$	3.6	m Ω
$R_{DS(on),TYP@ V_{GS}=2.5V}$	4.7	m Ω
I_D	40	A

DFN3x3



Part ID	Package Type	Marking	Packing
ZT036D02Q	DFN3x3	ZT036D02Q	5000pcs/Reel



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage	± 10	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	18	V	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_C = 25^\circ\text{C}$ 120	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_C = 25^\circ\text{C}$	40	A
		$T_C = 100^\circ\text{C}$	26	A
P_D	Maximum Power Dissipation	32	W	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3.5	$^\circ\text{C/W}$	
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 2)	56	mJ	

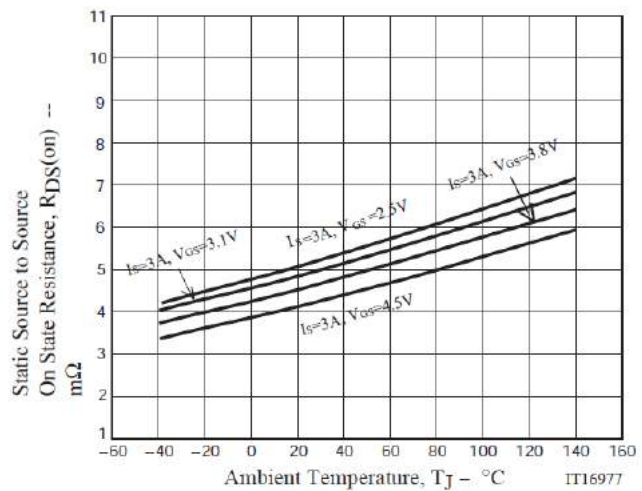
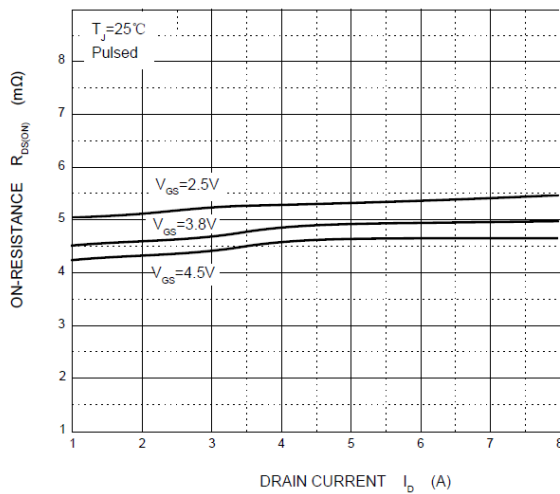
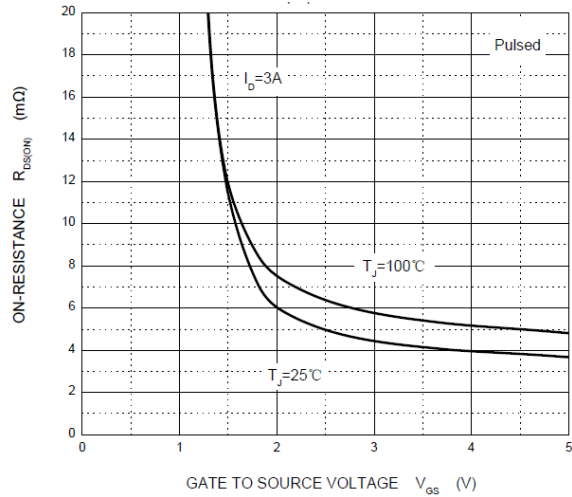
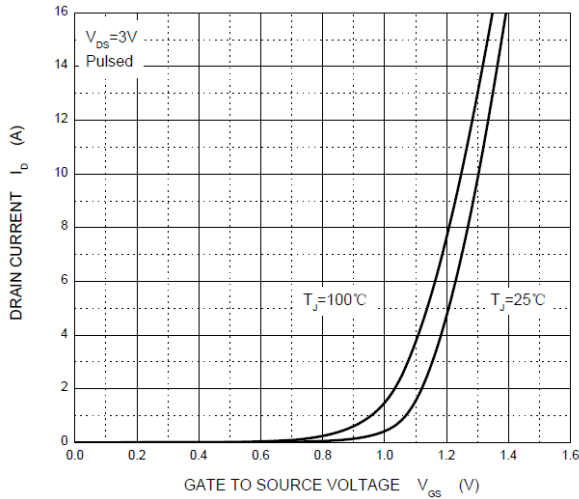
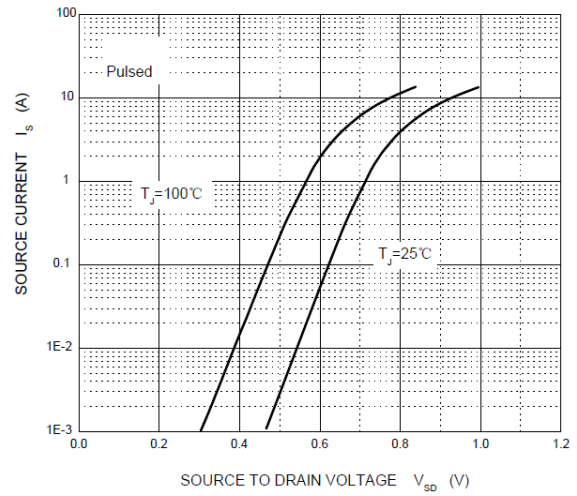
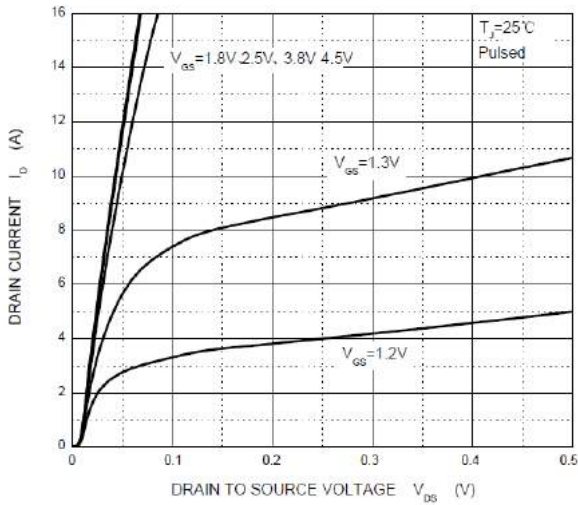
Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J=25°C (unless otherwise stated)						
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	18	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =18V, V _{GS} =0V	--	--	0.8	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±10V, V _{DS} =0V	--	--	±800	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	0.9	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =3A	--	3.6	5.2	mΩ
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =2.5V, I _D =1A	--	4.7	6.0	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =3A	--	38	--	S
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note 3,4)						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	--	1801	--	pF
C _{oss}	Output Capacitance		--	291	--	pF
C _{rss}	Reverse Transfer Capacitance		--	263	--	pF
Q _g	Total Gate Charge	V _{DS} =10V, I _D =3A, V _{GS} =4.5V	--	25	--	nC
Q _{gs}	Gate-Source Charge		--	3	--	nC
Q _{gd}	Gate-Drain Charge		--	7	--	nC
Switching Characteristics (Note 3,4)						
T _{d(on)}	Turn-on Delay Time	V _{DS} =10V, R _L =1.35Ω, R _G =3.0Ω, V _{GS} =4.5V	--	5.1	--	ns
T _r	Turn-on Rise Time		--	8.5	--	ns
T _{d(off)}	Turn-Off Delay Time		--	79.5	--	ns
T _f	Turn-Off Fall Time		--	22.4	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I _S	Diode Forward Current		--	--	40	A
V _{SD}	Forward on voltage	I _S =20A, V _{GS} =0V	--	--	1.0	V
T _{rr}	Reverse Recovery Time	T _J =25°C, I _F =3A	--	21	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	--	10	--	nC

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 0.5 mH, V_G=4.5V, V_{DD} = 10V, R_G = 25 Ω, Starting T_J = 25°C
3. I_{SD} ≤ I_{Dmax}, di/dt = 100A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Typical Performance Characteristics



Typical Performance Characteristics

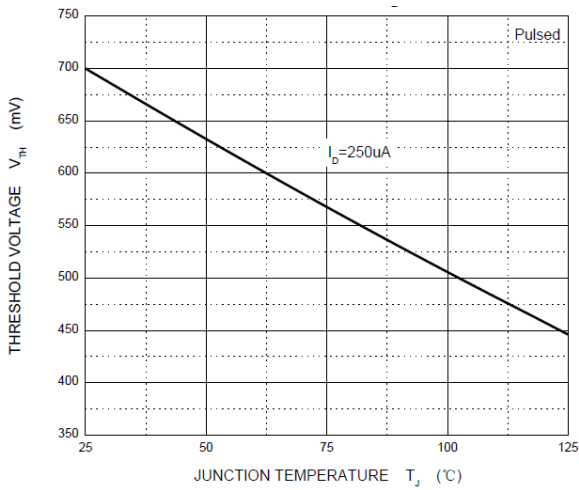


Fig. 7 Threshold Voltage

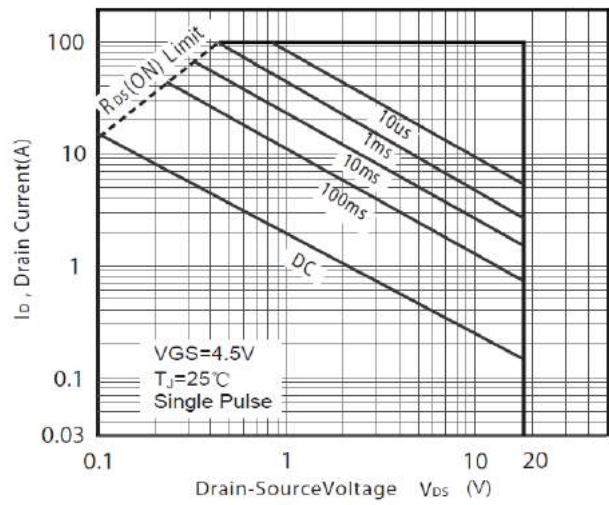


Fig.8 Safe Operating Area

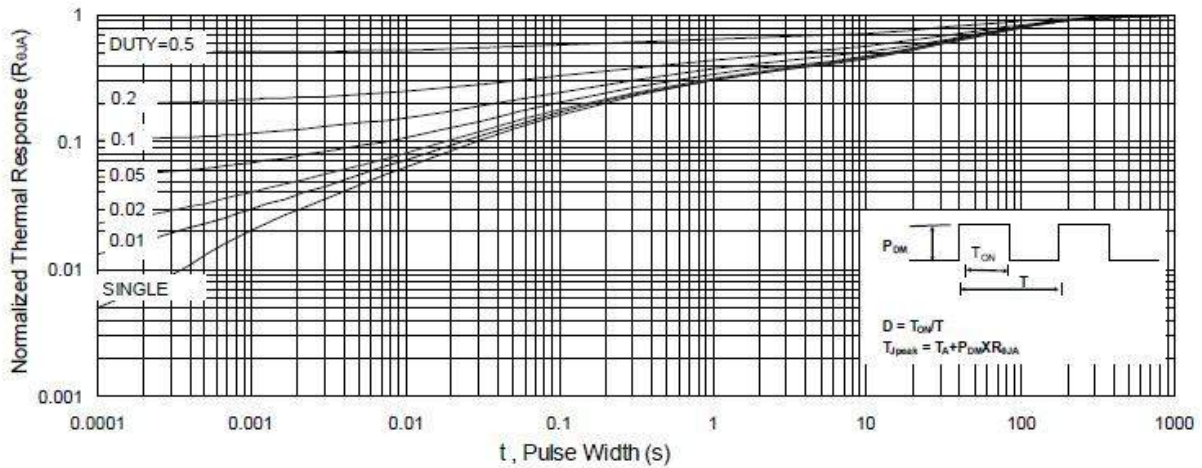
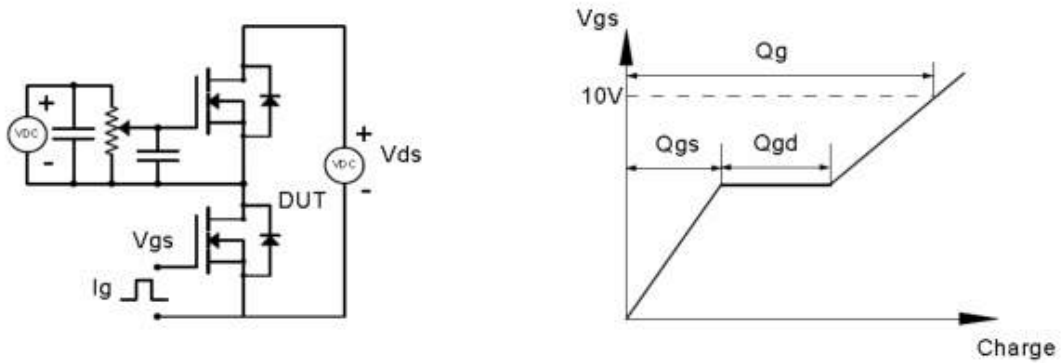


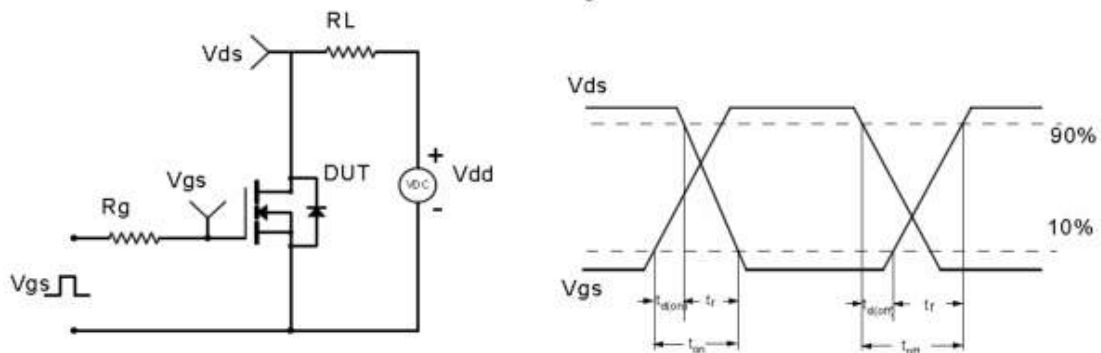
Fig.9 Normalized Maximum Transient Thermal Impedance

Test Circuit & Waveform

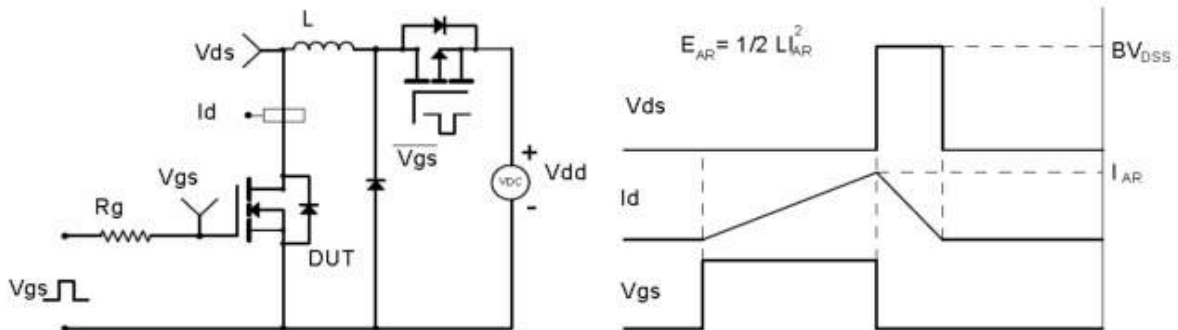
Gate Charge Test Circuit & Waveform



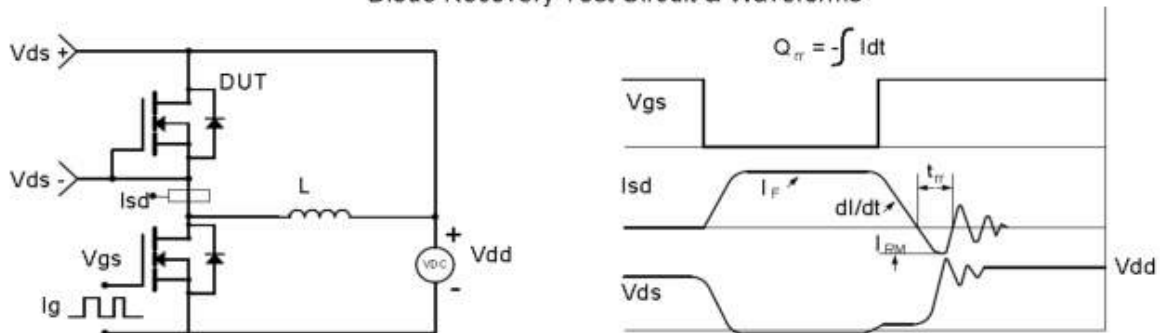
Resistive Switching Test Circuit & Waveforms



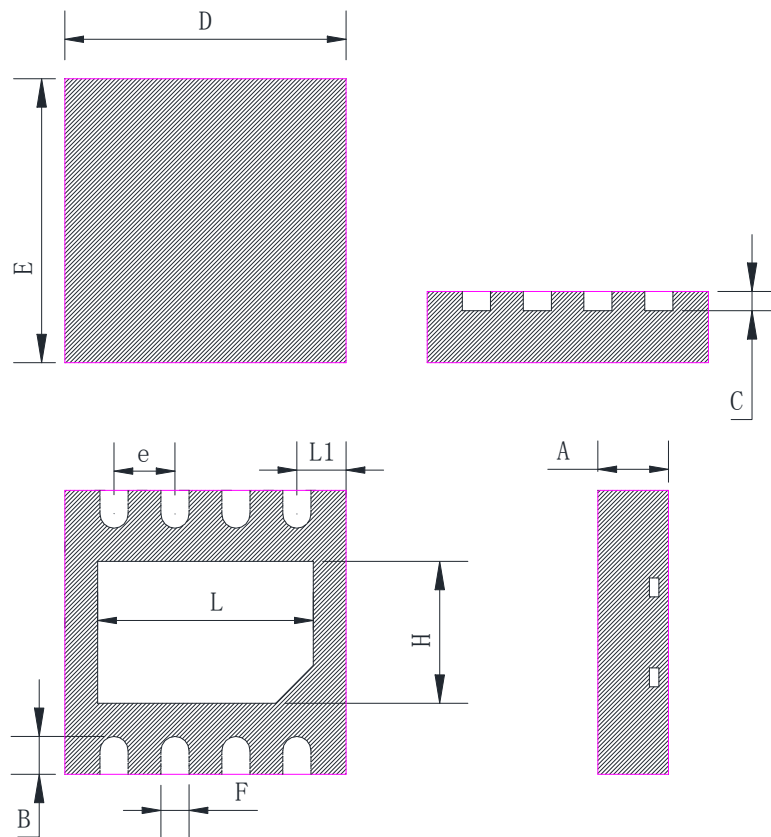
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



DFN3x3-8L Package Information



Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.35	0.40	0.45
C	0.153	0.203	0.253
D	2.90	3.00	3.10
E	2.90	3.00	3.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	1.40	1.50	1.60
L	2.20	2.30	2.40
L1	0.425	0.525	0.625

Customer Service

Sales and Service:

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