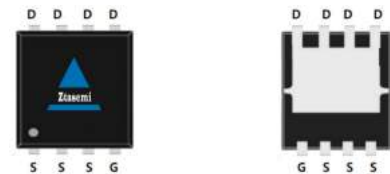


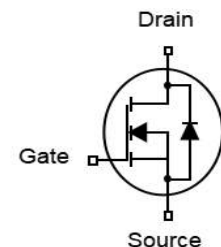
Features

- N-Channel
- Lead free product is acquired
- High Power and current handing capability
- 100% EAS Tested

V_{DS}	40	V
$R_{DS(on),TYP@ V_{GS}=10V}$	2.2	m Ω
$R_{DS(on),TYP@ V_{GS}=4.5V}$	3.3	m Ω
I_D	120	A

DFN5x6


Part ID	Package Type	Marking	Packing
ZT022N04G	DFN5x6	ZT022N04G	5000pcs/Reel



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings (T_c=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage	±20	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	40	V	
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_{DM}	Drain Current-Continuous@ Current-Pulsed ^(Note 1)	$T_C=25^\circ\text{C}$ 444	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_C=25^\circ\text{C}$	120	A
		$T_C=100^\circ\text{C}$	70	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	58	W
		$T_C=100^\circ\text{C}$	23	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.15	°C/W	
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed ^(Note 2)	576	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	40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.7	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	2.2	2.7	mΩ
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =20A	--	3.3	4.2	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A	--	38	--	S
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	--	6460	--	pF
C _{oss}	Output Capacitance		--	455	--	pF
C _{rss}	Reverse Transfer Capacitance		--	276	--	pF
R _g	Gate Resistance	f=1MHz	--	0.67	--	Ω
Q _g	Total Gate Charge	V _{DS} =20V, I _D =20A, V _{GS} =10V	--	112	--	nC
Q _{gs}	Gate-Source Charge		--	16.7	--	nC
Q _{gd}	Gate-Drain Charge		--	26.5	--	nC
Switching Characteristics						
T _{d(on)}	Turn-on Delay Time	V _{DS} =20V, R _L =1Ω, R _G =3Ω, V _{GS} =10V	--	18	--	ns
T _r	Turn-on Rise Time		--	4.4	--	ns
T _{d(off)}	Turn-Off Delay Time		--	67	--	ns
T _f	Turn-Off Fall Time		--	9.5	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I _{SD}	Source-Drain Current (Body Diode)		--	--	120	A
V _{SD}	Forward on voltage (Note 3)	I _S =20A, V _{GS} =0V	--	--	1.2	V
T _{rr}	Reverse Recovery Time	T _J =25°C, I _F =20A, V _{GS} =0V	--	6	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=500A/μs	--	14	--	nC

Notes :

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.E_{AS} condition: T_J=25°C, V_{DD}=40V, V_G=10V, R_G=25Ω, L=0.5mH.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

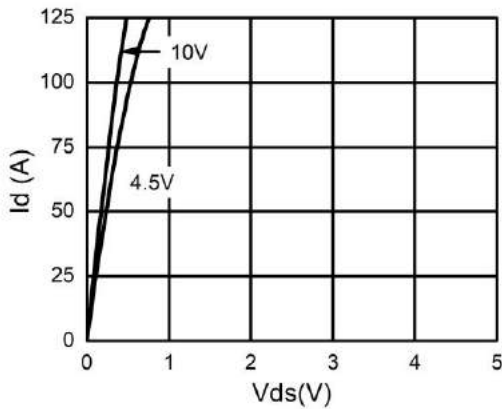


Figure 1. Output Characteristics

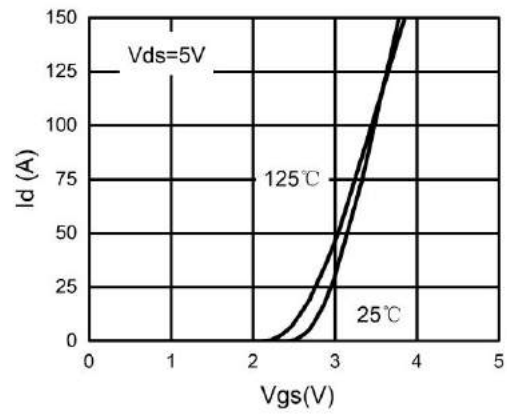


Figure 4. Transfer Characteristics

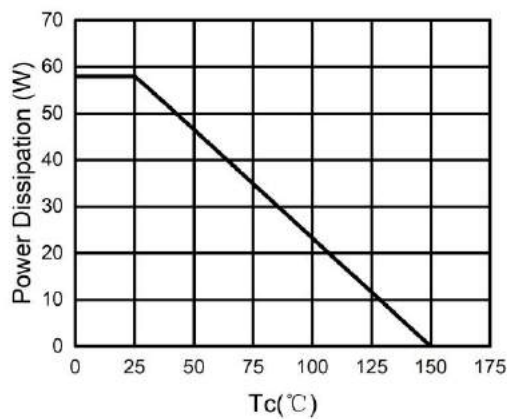


Figure 2. Power Dissipation

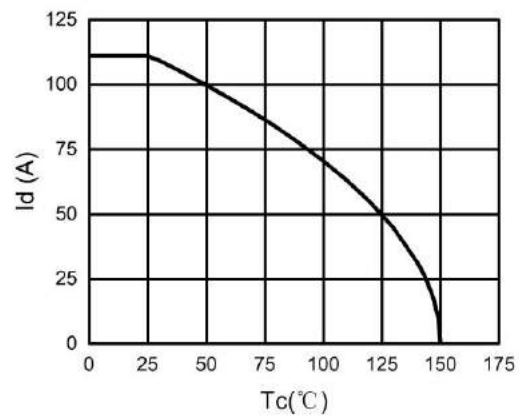


Figure 5. Drain Current

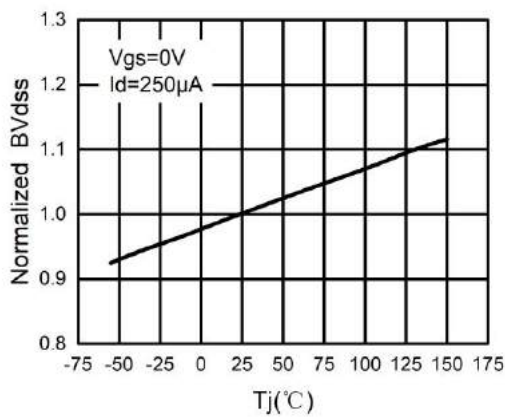


Figure 3. BV_{dss} vs Junction Temperature

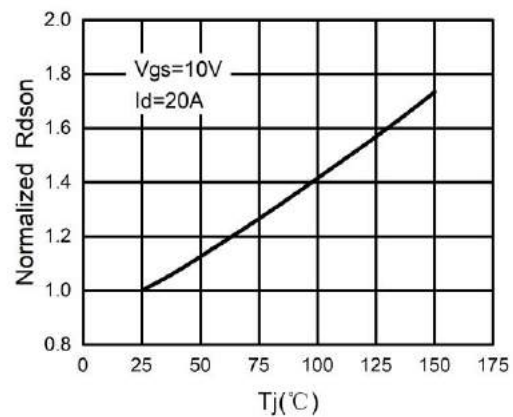


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

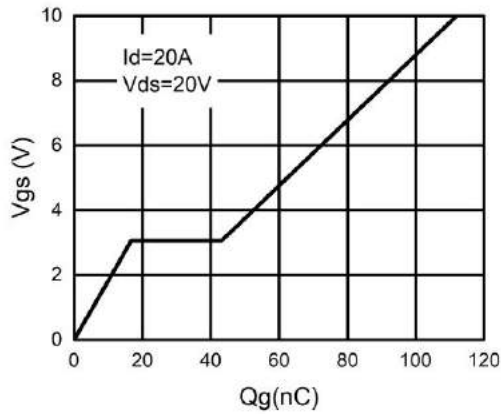


Figure 7. Gate Charge Waveforms

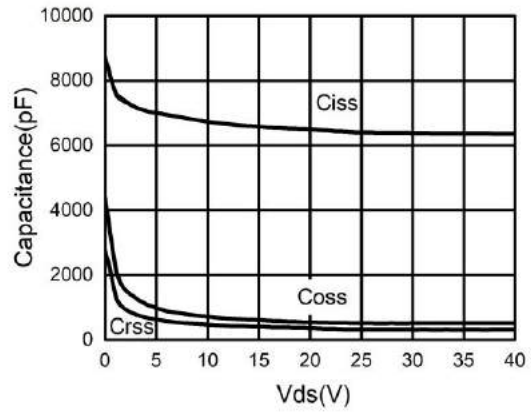


Figure 9. Capacitance

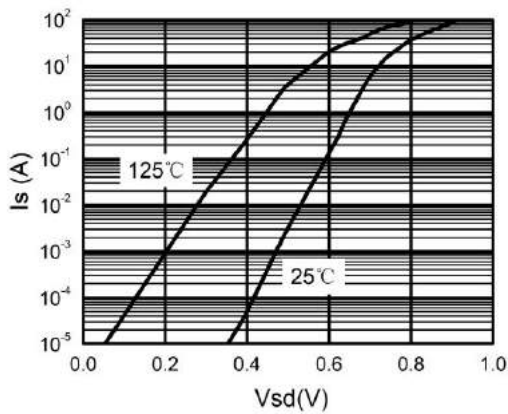


Figure 8. Body-Diode Characteristics

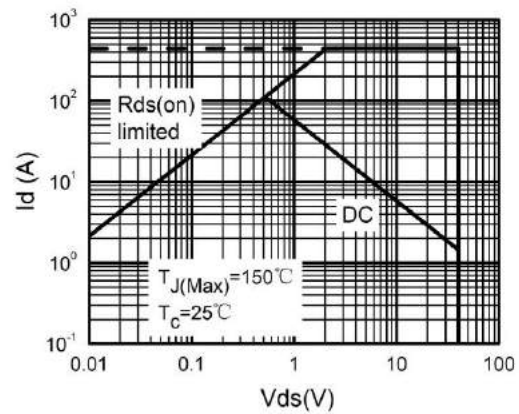
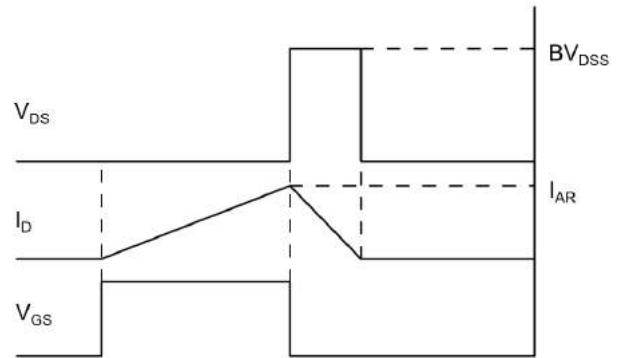
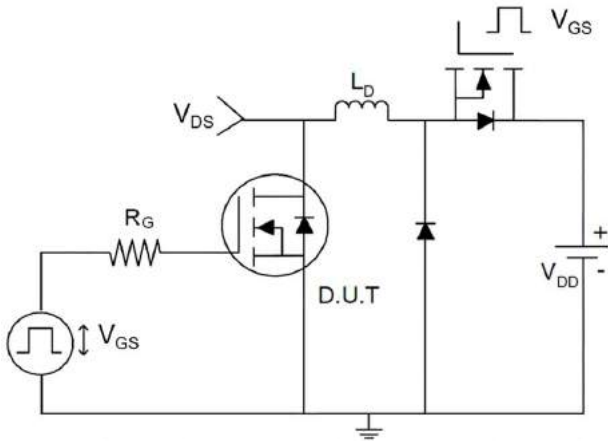


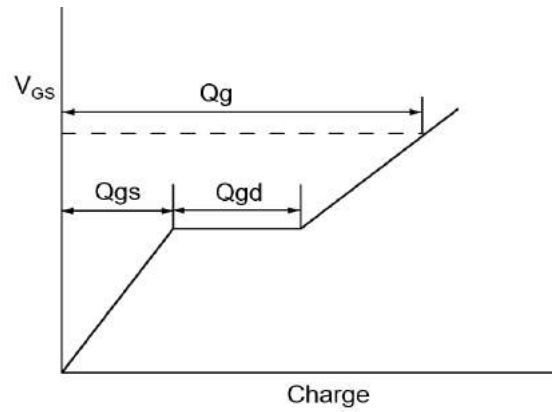
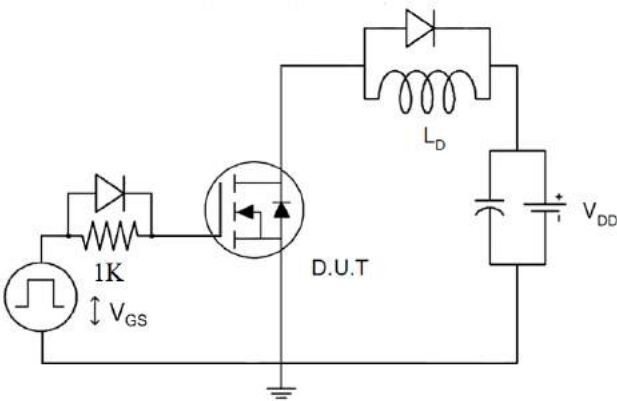
Figure 10. Maximum Safe Operating Area

Test Circuit

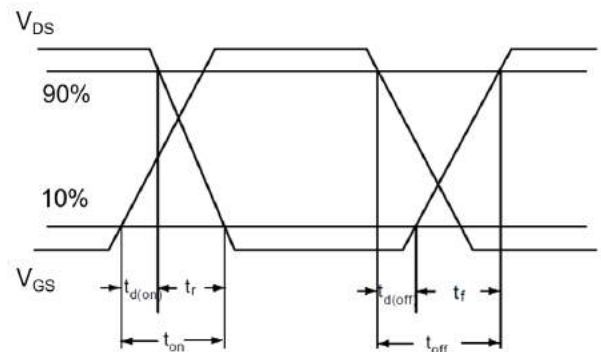
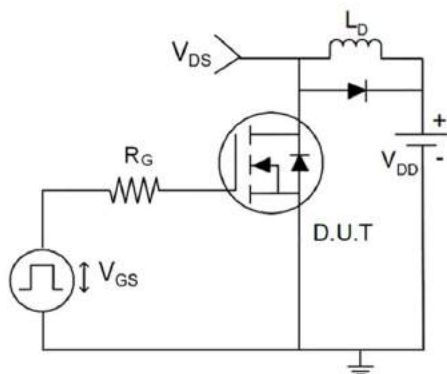
1) E_{AS} Test Circuits



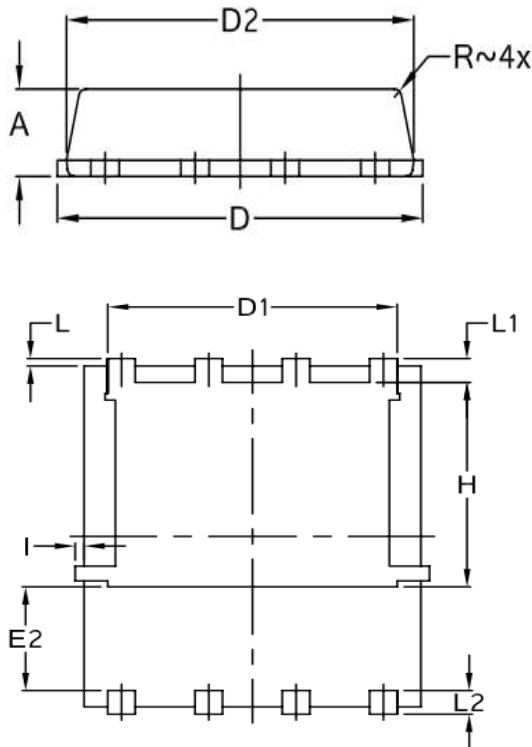
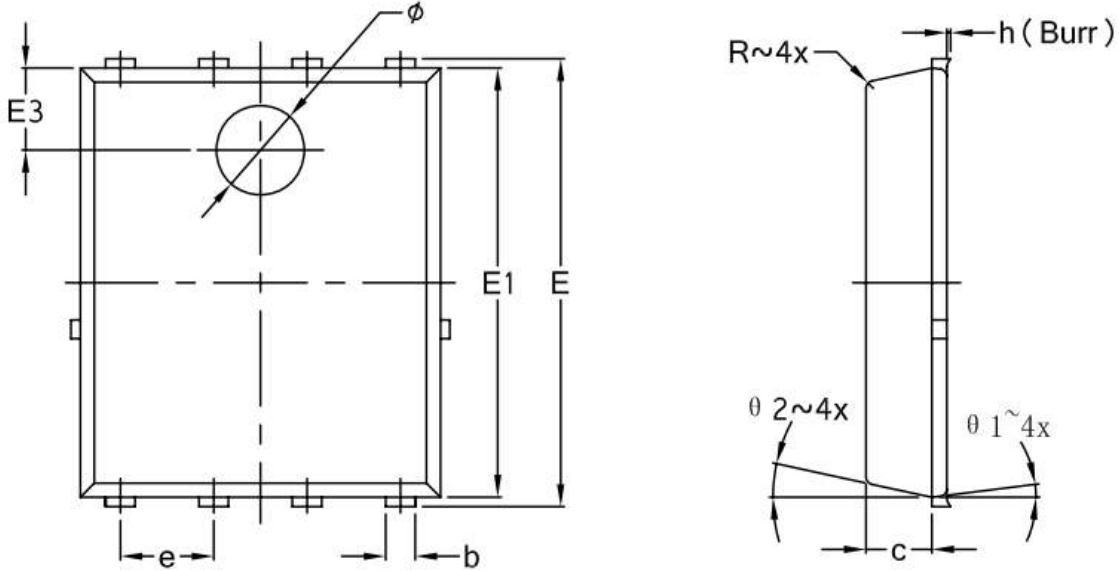
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



DFN5x6-8L Package Information



SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.35	0.46	0.0138	0.0181
c	0.84	0.95	0.0331	0.0374
D	4.83	5.37	0.1902	0.2114
D1	4.14	4.28	0.1630	0.1685
D2	4.83	4.97	0.1902	0.1957
E	6.03	6.13	0.2374	0.2413
E1	5.68	5.82	0.2236	0.2291
E2	1.65	—	0.0650	—
E3	1.03	1.17	0.0406	0.0461
e	1.27 BSC		0.0500 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.40	0.48	0.0157	0.0189
L2	0.40	0.48	0.0157	0.0189
H	3.315	3.475	0.1305	0.1368
I	—	0.16	—	0.0063
phi	1.13	1.27	0.0445	0.0500
R	0.10		0.0039	
theta 1	7° REF		7° REF	
theta 2	12° REF		12° REF	
h	0.08 MAX		0.0031	

Customer Service

Sales and Service:

zj@ztasemi.com