

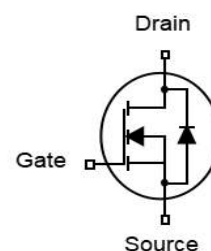
Features

- N-Channel
- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- 150 °C operating temperature
- 100% EAS Tested

V_{DS}	60	V
$R_{DS(on),TYP}@ V_{GS}=10V$	2.4	m Ω
I_D	140	A

DFN5x6


Part ID	Package Type	Marking	Packing
ZTG024N06GC	DFN5x6	ZTG024N06GC	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	± 20	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60	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	$T_c = 25^\circ\text{C}$ 560	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_c = 25^\circ\text{C}$	140	A
		$T_c = 100^\circ\text{C}$	88	A
P_D	Maximum Power Dissipation	109	W	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.15	$^\circ\text{C/W}$	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	50	$^\circ\text{C/W}$	
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 1)	180	mJ	

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ $T_J=25^\circ\text{C}$ (unless otherwise stated)						
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	--	--	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	--	--	1	μA
IGSS	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	--	3.5	V
RDS(on)	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=15A$	--	2.4	2.75	m Ω
Dynamic Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise stated)						
Ciss	Input Capacitance	$V_{DS}=30V, V_{GS}=0V,$ $f=1\text{MHz}$	--	3100	--	pF
Coss	Output Capacitance		--	741	--	pF
Crss	Reverse Transfer Capacitance		--	26	--	pF
Rg	Gate Resistance	$f=1\text{MHz}$	--	1.6	--	Ω
Qg	Total Gate Charge	$V_{DS}=30V, I_D=30A,$ $V_{GS}=10V$	--	47	--	nC
Qgs	Gate-Source Charge		--	16	--	nC
Qgd	Gate-Drain Charge		--	10	--	nC
Switching Characteristics (Note 2)						
Td(on)	Turn-on Delay Time	$V_{DD}=30V,$ $I_D=15A,$ $R_G=4.7\Omega,$ $V_{GS}=10V$	--	20	--	ns
Tr	Turn-on Rise Time		--	34	--	ns
Td(off)	Turn-Off Delay Time		--	41	--	ns
Tf	Turn-Off Fall Time		--	13	--	ns
Source- Drain Diode Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise stated)						
IS	Diode Forward Current		--	--	140	A
VSD	Forward on voltage	$I_S=30A, V_{GS}=0V$	--	--	1.2	V
Trr	Reverse Recovery Time	$I_S=30A, V_{GS}=0V$ $V_R=48V$	--	50	--	ns
Qrr	Reverse Recovery Charge (Note 4)		$di/dt=100A/\mu s$	--	76	--

Notes:

- EAS condition : $T_J=25^\circ\text{C}, V_{DD}=48V, V_G=10V, L=0.1\text{mH}, R_G=25\Omega$
- Guaranteed by design, not subject to production
- These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_J(\text{MAX})=150^\circ\text{C}$. The SOA curve provides a single pulse rating.
- Pulse test: pulse width $\leq 300\mu s$ Duty Cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristics

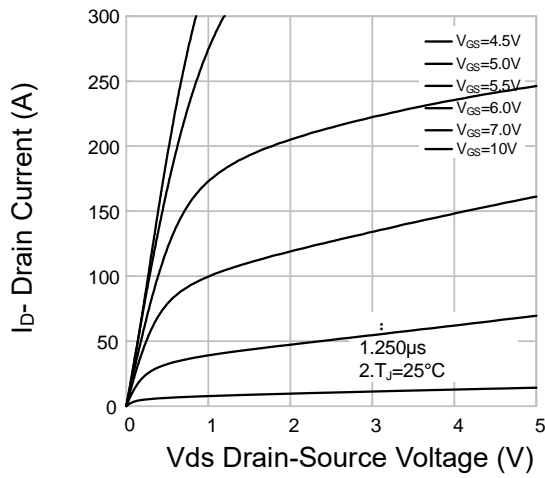


Figure 1 Output Characteristics

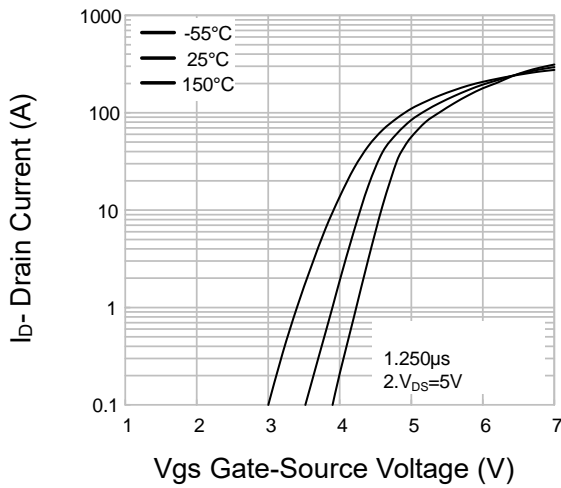


Figure 2 Transfer Characteristics

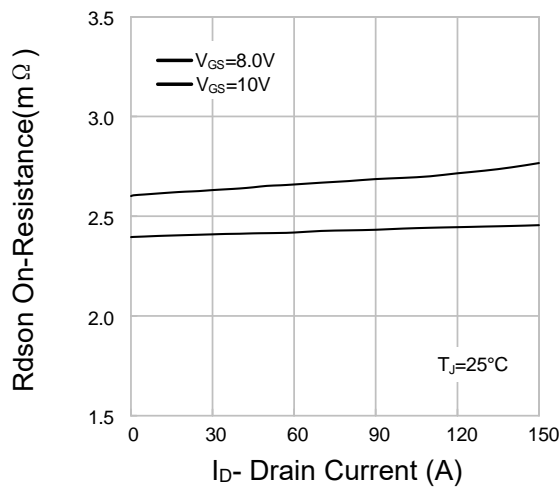


Figure 3 Rds(on)- Drain Current

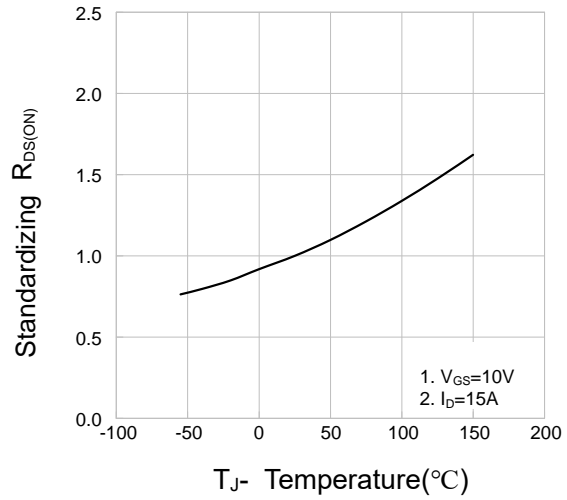


Figure 4 Rds(on) VS Temperature Characteristic

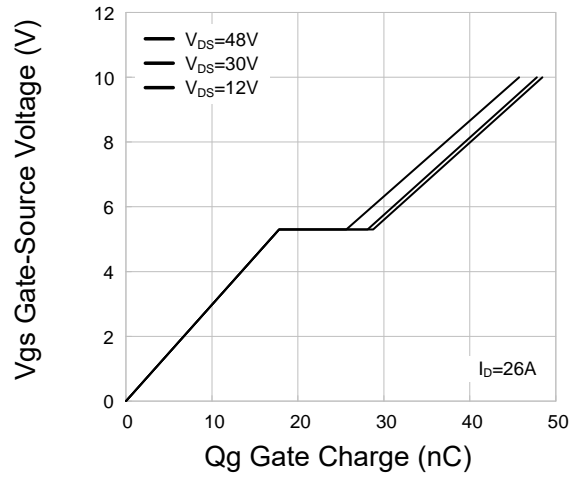


Figure 5 Gate Charge

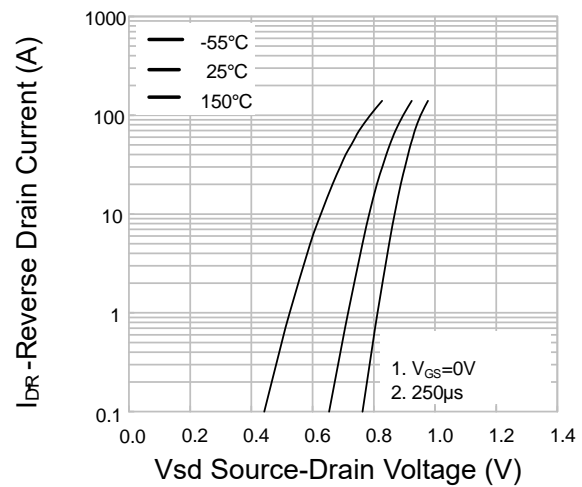


Figure 6 Drain current and temperature - Drain Diode Forward

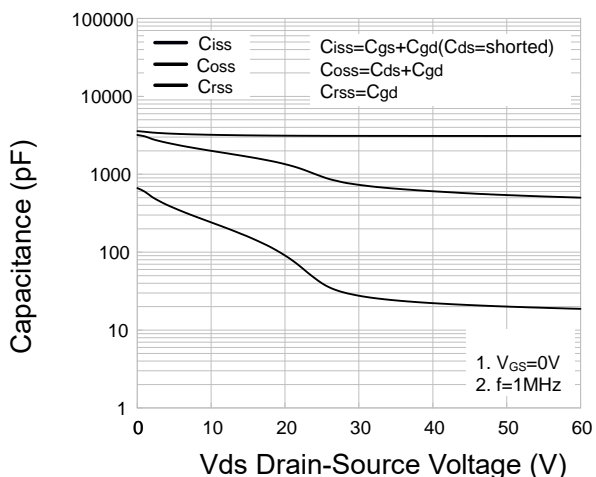


Figure 7 Capacitance vs Vds

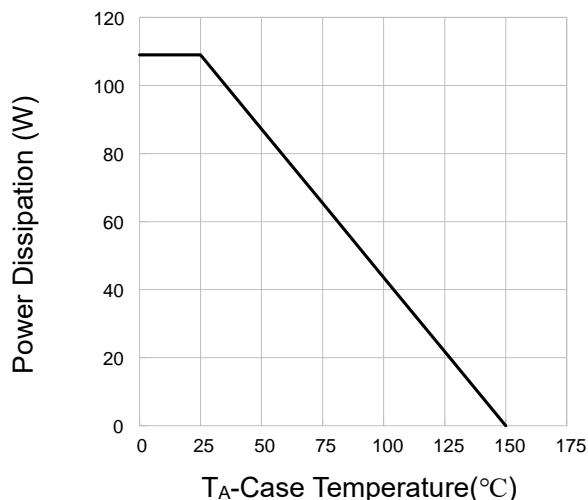


Figure 9 Power De-rating

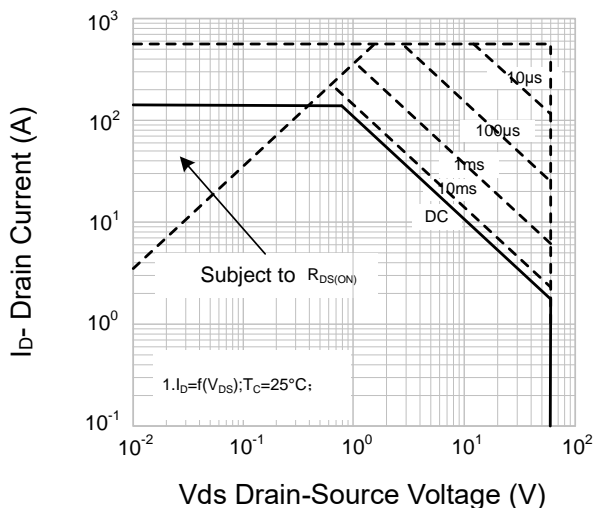


Figure 8 Safe Operation Area (Note 3)

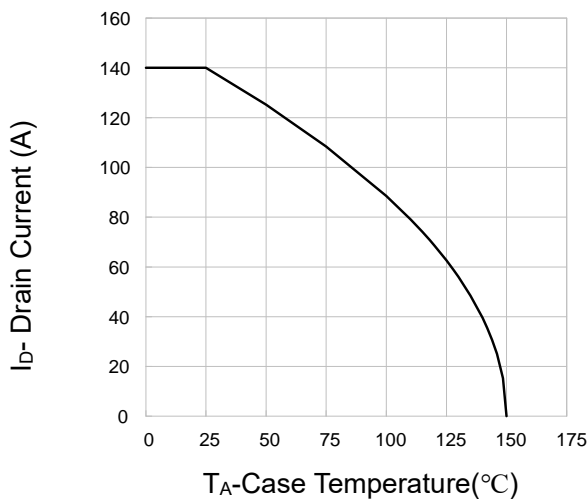


Figure 10 Current De-rating

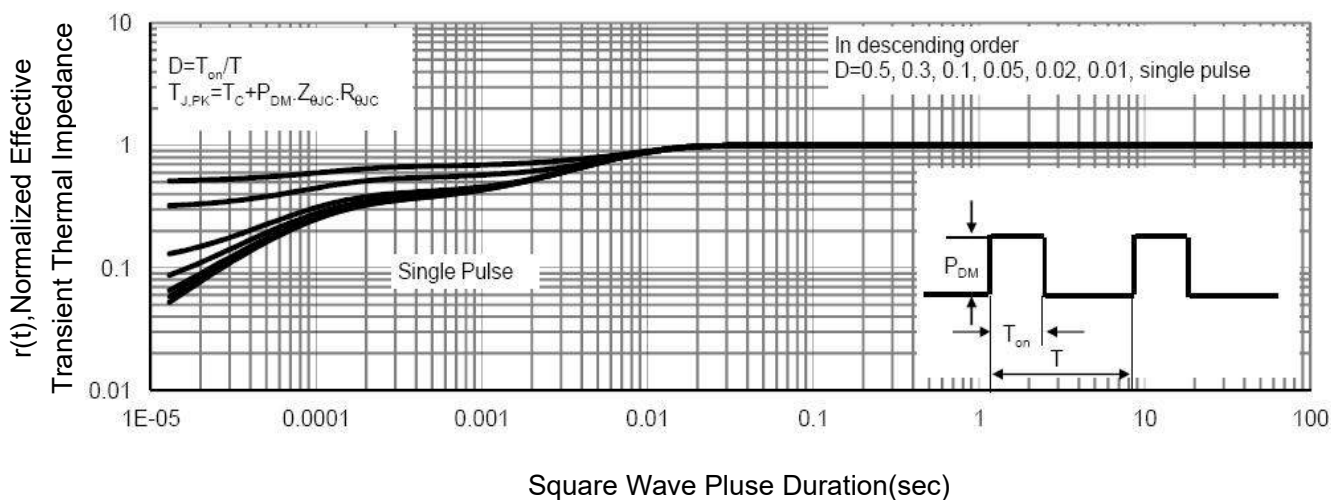
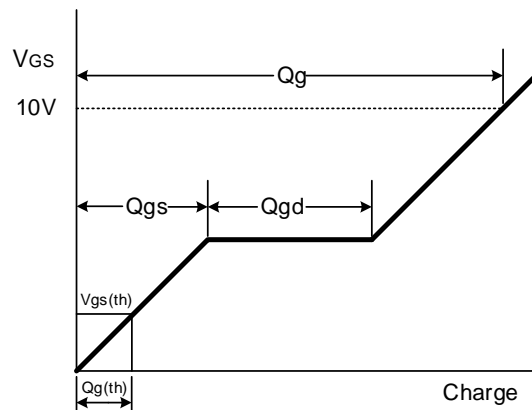
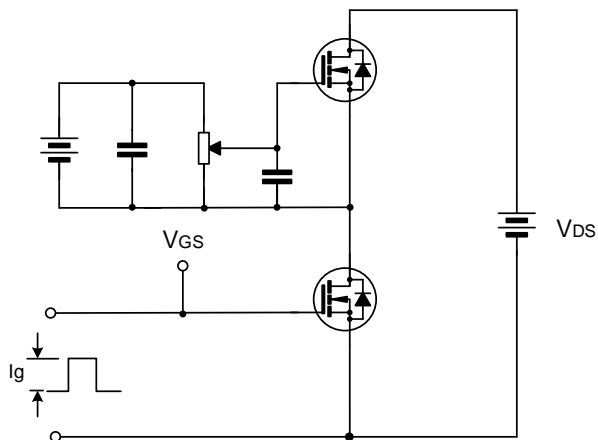
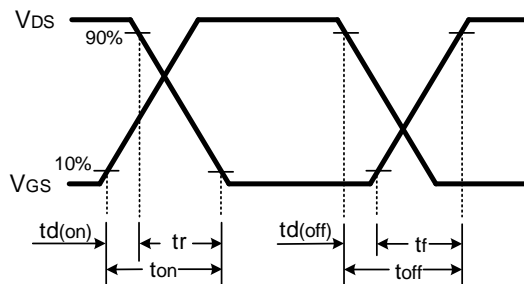
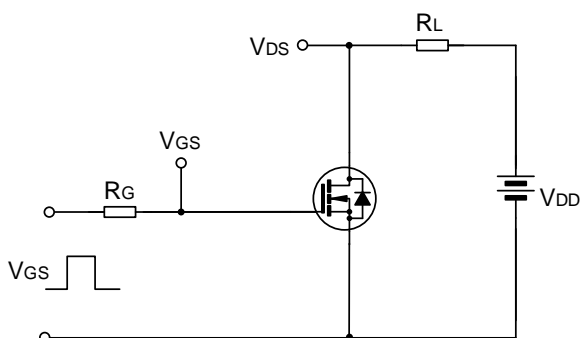


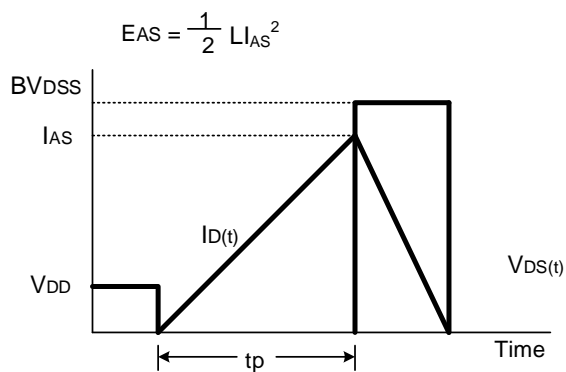
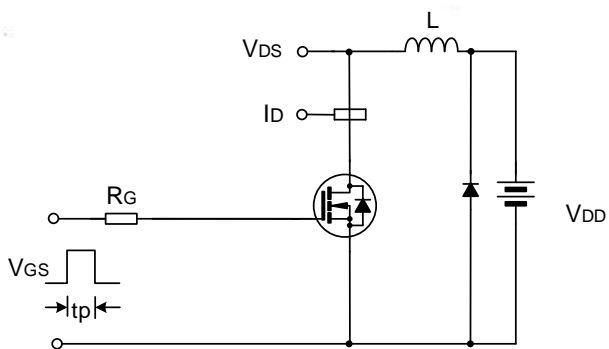
Figure 11 Normalized Maximum Transient Thermal Impedance



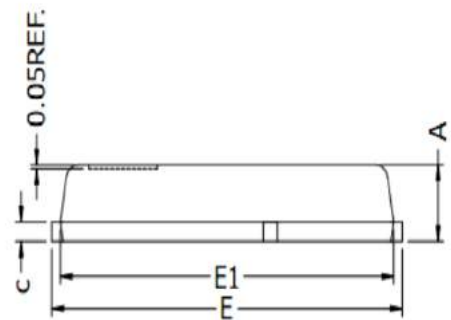
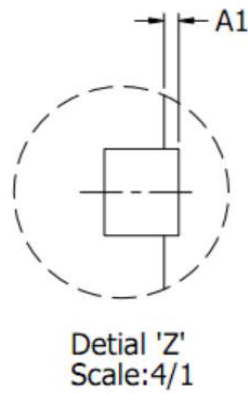
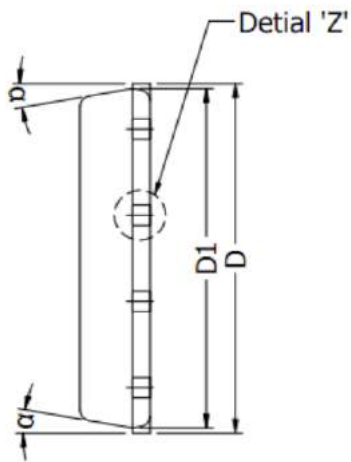
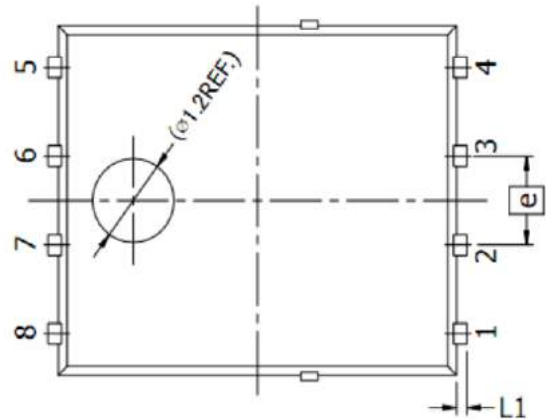
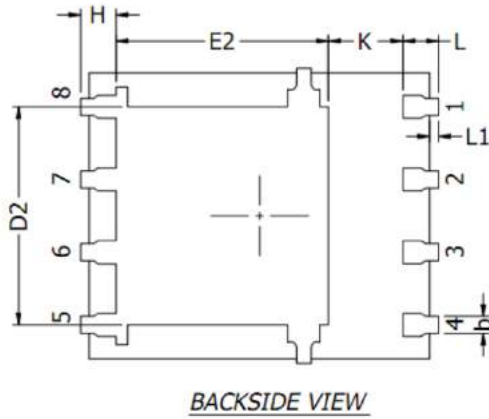
Resistive Switching Test Circuit & Waveforms



EAS Test Circuit & Waveforms



DFN5x6-8L Package Information



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.30	0.40	0.50
c	0.20	0.25	0.30
D	5.15 BSC		
D1	5.00 BSC		
D2	3.76	3.81	3.86
E	6.15 BSC		
E1	5.80	5.85	5.90
E2	3.45	3.65	3.85
e	1.27 BSC		
H	0.51	0.61	0.71
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.08	0.15	0.23
α	10°	11°	12°

Customer Service

Sales and Service:
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