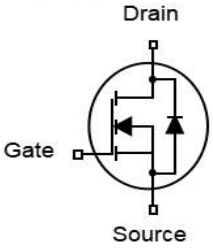
Features

- N-Channel
- Low RDS(ON) & FOM
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery
- 100% EAS Tested

V_{DS}	60	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	1.6	mΩ
I_D	240	A

TO-220



Part ID	Package Type	Marking	Packing
ZTG018N06	TO-220	ZTG018N06	1000pcs/Tape

Absolute Maximum Ratings T_A =25°C, unless otherwise specified

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		60	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 2)	T_C =25°C	960	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 1)	T_C =25°C	240	A
		T_C =100°C	151	A
P_D	Maximum Power Dissipation (Note 3)		184	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.68	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 6)		870	mJ

Electrical Characteristics (T_J=25℃ 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	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,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	2.5	3	3.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=50A	--	1.6	2.0	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note 4,5)						
Ciss	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	7368	--	pF
Coss	Output Capacitance		--	1653	--	pF
Crss	ReverseTransferCapacitance		--	48	--	pF
Rg	Gate Resistance	f=1MHz	--	1.4	--	Ω
Qg	Total Gate Charge	V_{DS}=30V,I_D=50A, V_{GS}=10V	--	104	--	nC
Qgs	Gate-SourceCharge		--	40	--	nC
Qgd	Gate-DrainCharge		--	20	--	nC
Switching Characteristics (Note 4,5)						
Td(on)	Turn-on Delay Time	V_{DD}=30V, I_D=50A, R_G=2.5Ω, V_{GS}=10V	--	31	--	ns
Tr	Turn-on Rise Time		--	33	--	ns
Td(off)	Turn-Off Delay Time		--	61	--	ns
Tf	Turn-Off Fall Time		--	16	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_S	Diode Forward Current (Note 2)		--	--	240	A
V_{SD}	Forward on voltage (Note 3)	I_S =50A,V_{GS}=0V	--	--	1.4	V
Trr	Reverse Recovery Time	V_R =34V,I_S =50A di/dt=100A/μs	--	72	--	ns
Qrr	Reverse Recovery Charge		--	138	--	nC

Notes:

1. The rating only refers to the maximum absolute value of 25 °C in the specification. If the shell temperature is higher than 25 °C,it needs to be derated according to the actual environmental conditions.
2. Pulse time 5us,pulse width is limited by the maximum junction temperature.
3. The dissipated power value will change with the change of temperature, when greater than 25 ° C, the dissipated power value will decrease by 1.47 W/°C with the increase of 1 °C of temperature.
4. Pulse test: pulse width ≤ 300μs，Duty Cycle ≤ 2%.
5. Basically unaffected by operating temperature.
6. E_{AS} condition T_J=25°C，L=0.5mH，V_{DD}=48V，R_G=25Ω，

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

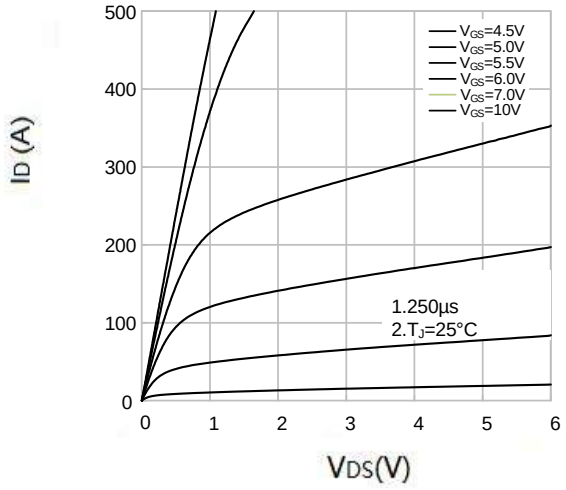


Figure 1 Output Characteristics

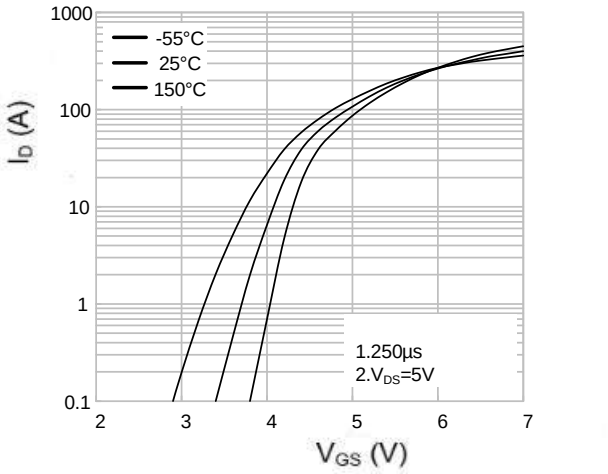


Figure 4 Transfer Characteristics

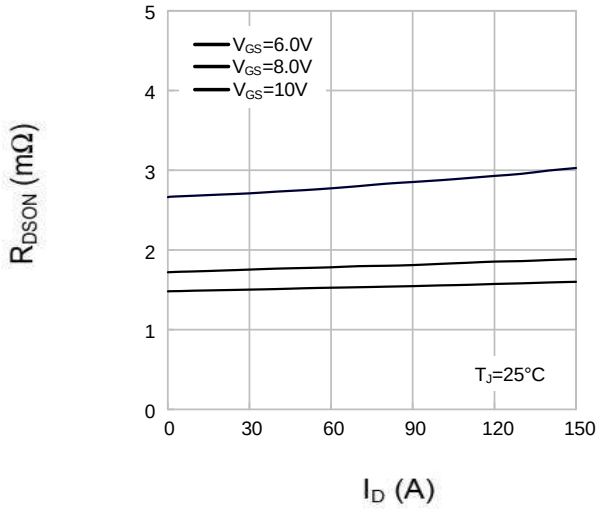


Figure 2 Rdson- Drain Current

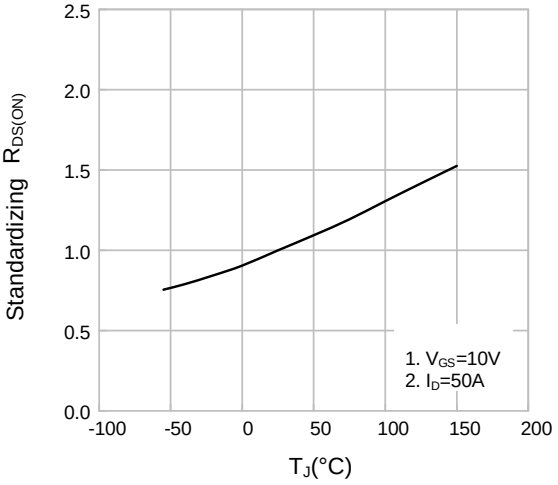


Figure 5 Rds(on) VS Temperature Characteristic

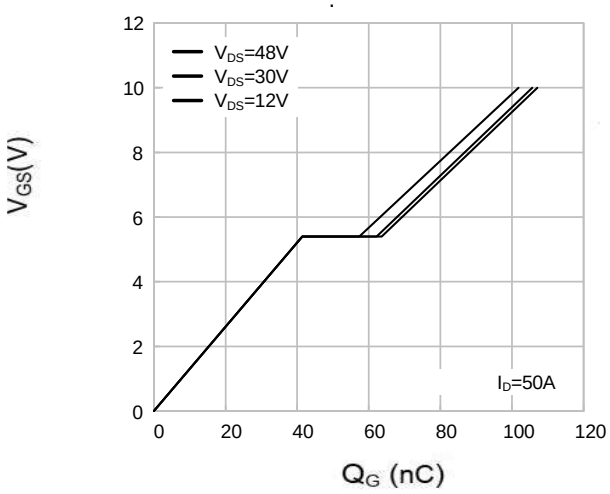


Figure 3 Gate Charge

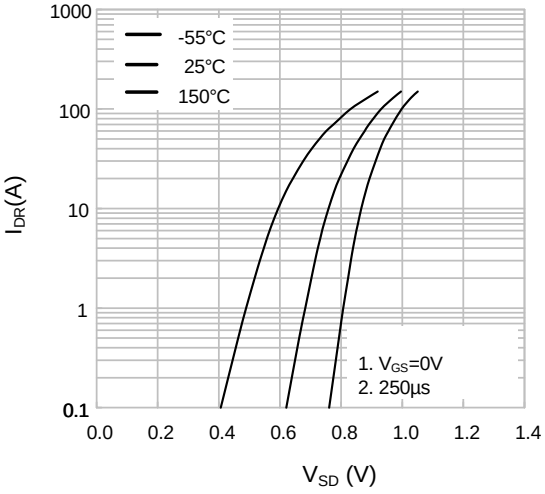


Figure 6 Drain current and temperature - Drain Diode Forward

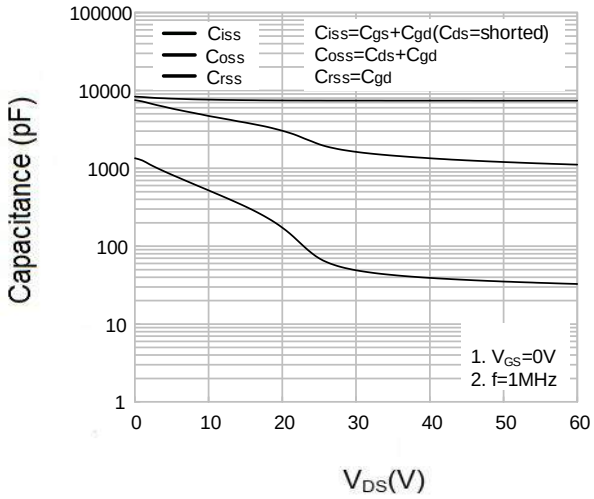


Figure 7 Capacitance vs Vds

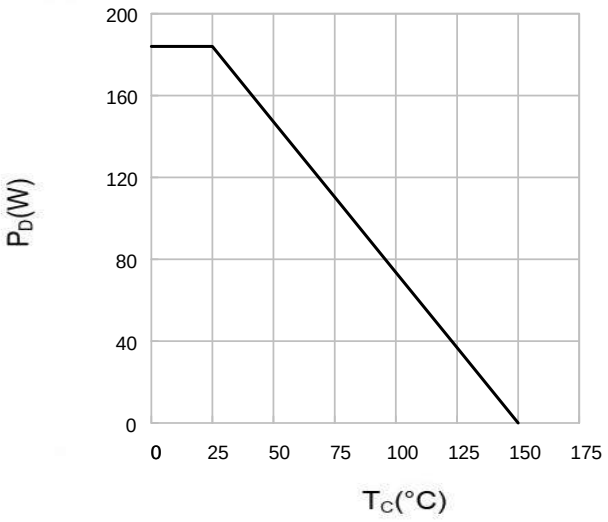


Figure 9 Power De-rating

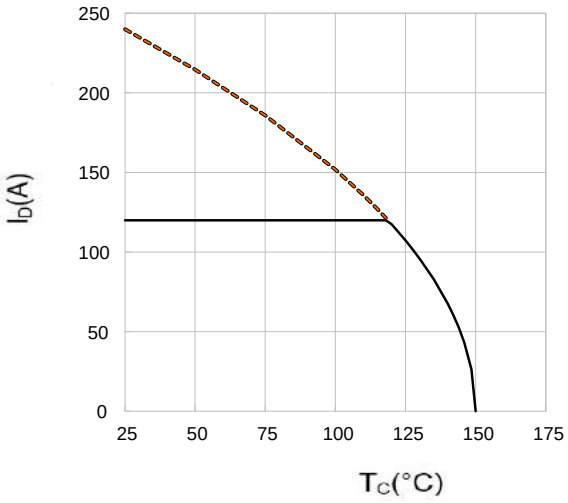


Figure 8 Current De-rating

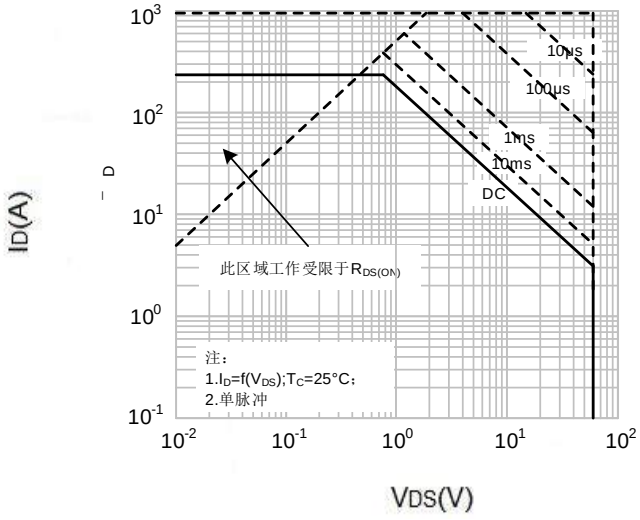


Figure 10 Safe Operation Area

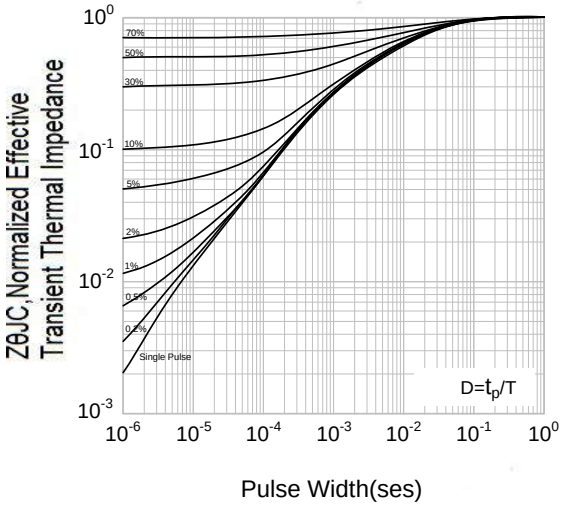
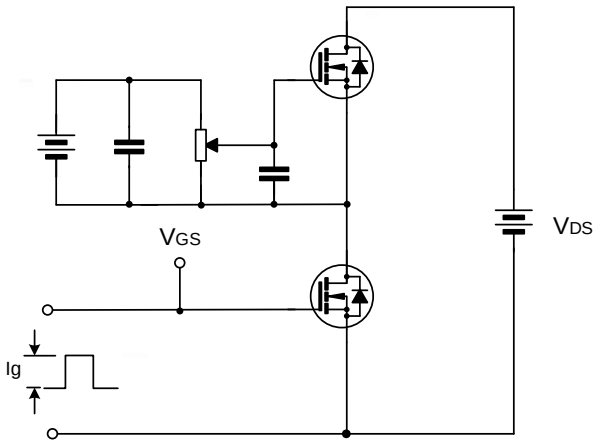
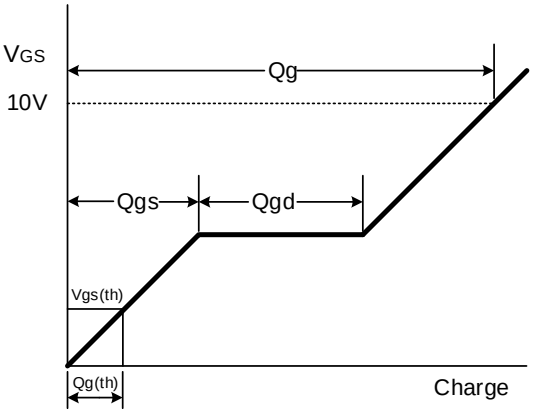


Figure 11 Normalized Maximum Transient Thermal Impedance

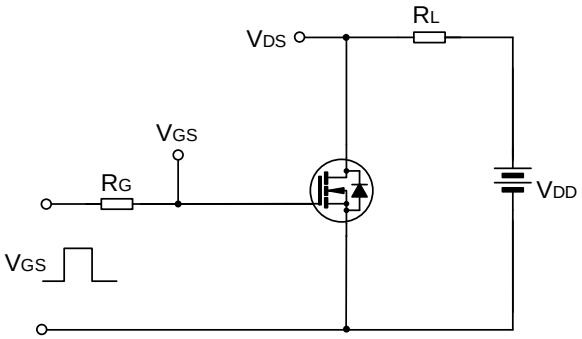
Test circuit&Waveform

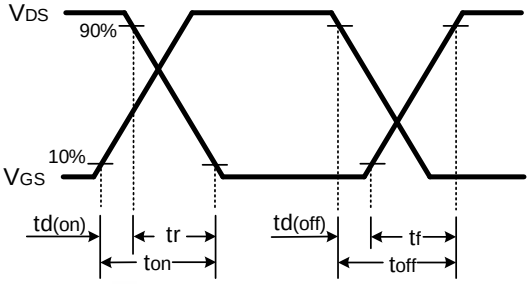
Gate Charge Test Circuit & Waveform



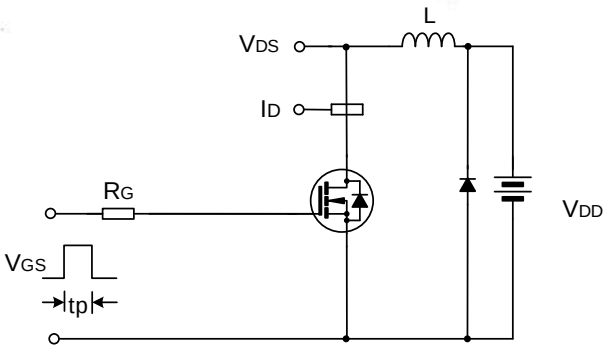


Resistive Switching Test Circuit & Waveforms

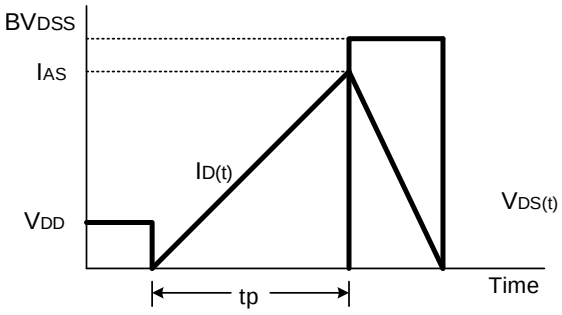




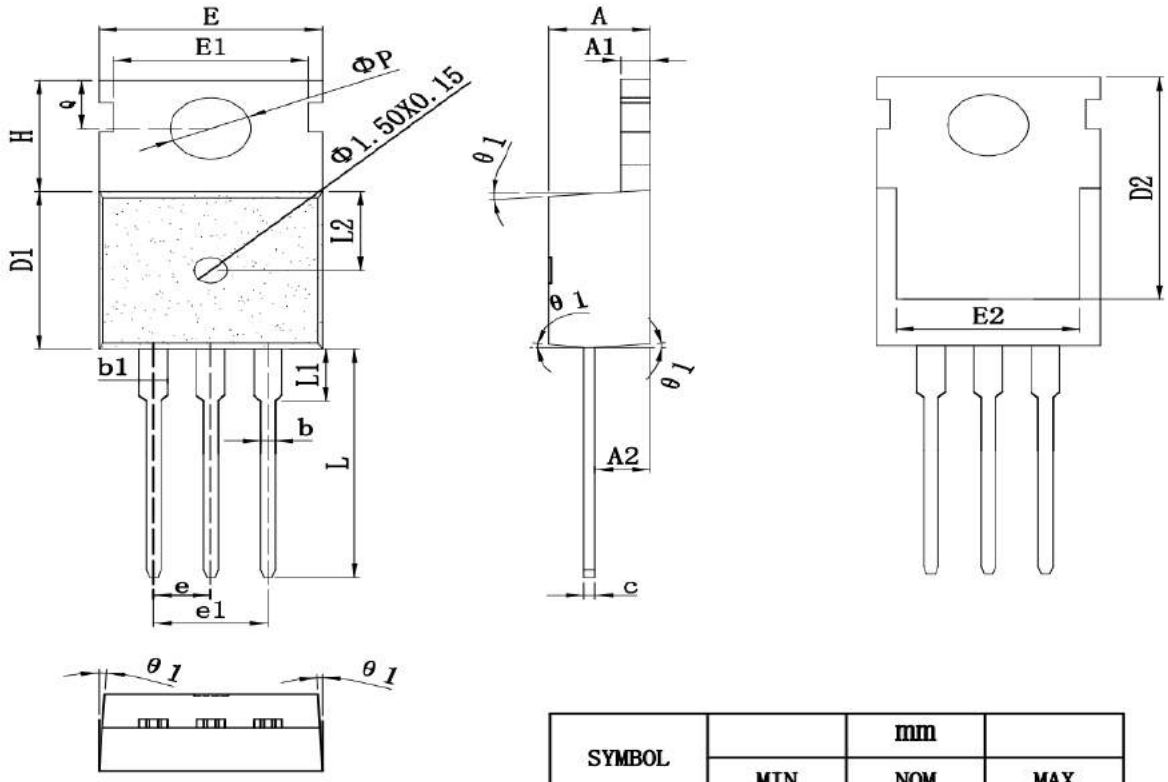
EAS Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} LI_{AS}^2$$



TO-220-3L Package Information



SYMBOL		mm		
		MIN	NOM	MAX
✱A		4.40	4.50	4.60
✱A1		1.25	1.30	1.35
✱A2		2.30	2.40	2.50
✱b		0.75	0.80	0.85
✱b1		1.25	1.33	1.42
✱c		0.45	0.50	0.55
✱D1		9.10	9.20	9.30
D2		12.90	13.10	13.30
✱E		9.80	10.02	10.15
✱E1		8.55	8.70	8.85
E2	220FB框架	7.80	8.00	8.20
	220FC框架	7.40	7.60	7.80
✱e		2.50	2.54	2.58
e1		5.08REF		
H		6.40	6.50	6.60
✱L		13.00	13.28	13.45
✱L1		—	—	3.40
L2		4.55	4.65	4.75
✱ΦP		3.60	3.65	3.75
✱Q		2.70	2.80	2.90
θ1		2°	—	7°

Customer Service

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