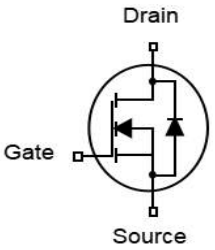
Features

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

V_{DS}	150	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	7.8	mΩ
I_D	110	A

TO-220



Part ID	Package Type	Marking	Packing
ZTG088N15	TO-220	ZTG088N15	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		150	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_{DM}	Drain Current-Continuous@ Current-Pulsed	T_C =25°C	440	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	110	A
		T_C =100°C	93	A
P_D	Maximum Power Dissipation		300	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case (Note 2)		0.5	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 5)		1000	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	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,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	3.0	--	4.6	V
$R_{DS(on)}$	Drain-Source On-State Resistance (Note 3)	V_{GS}=10V, I_D=44A	--	7.8	9.5	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note 4)						
Ciss	Input Capacitance	V_{DS}=75V,V_{GS}=0V, f=1MHz	--	2800	--	pF
Coss	OutputCapacitance		--	710	--	pF
Crss	ReverseTransferCapacitance		--	17	--	pF
g_{FS}	Forward Transconductance	V_{DS}=2V,I_D=20A,	--	41	--	S
Qg	Total Gate Charge	V_{DS}=75V,I_D=44A, V_{GS}=10V	--	40	--	nC
Qgs	Gate-SourceCharge		--	23	--	nC
Qgd	Gate-DrainCharge		--	6.6	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DD}=75V, I_D =44A, R_G=3.0Ω, V_{GS}=10V	--	24	--	ns
Tr	Turn-on Rise Time		--	91	--	ns
Td(off)	Turn-Off Delay Time		--	27	--	ns
Tf	Turn-Off Fall Time		--	32	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode) (Note 2)		--	--	110	A
V_{SD}	Forward on voltage (Note 3)	I_F=44A,V_{GS}=0V	--	--	1.4	V
Trr	Reverse Recovery Time	T_j=25℃,I_F =44A, di/dt=100A/μs	--	48	--	ns
Qrr	Reverse Recovery Charge (Note 3)		--	58	--	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition : Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω

Typical Electrical and Thermal Characteristics

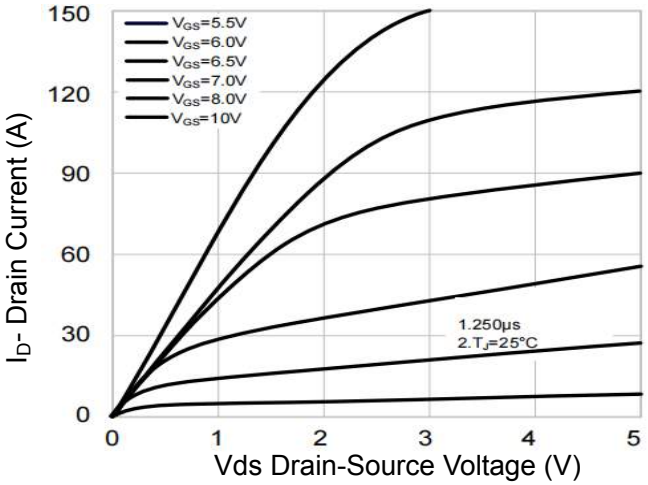


Figure 1 Output Characteristics

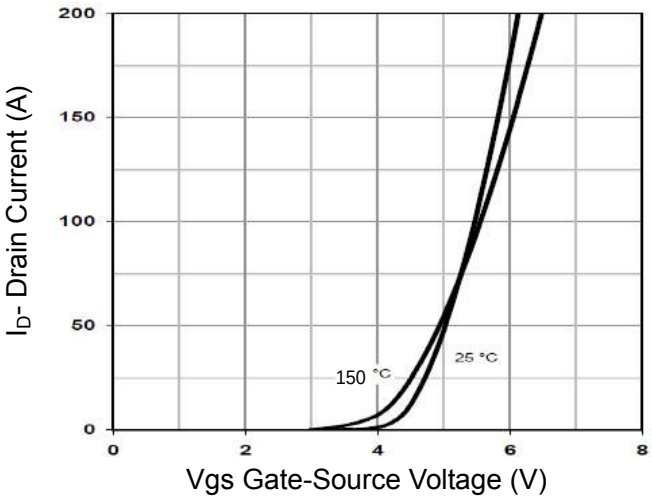


Figure 2 Transfer Characteristics

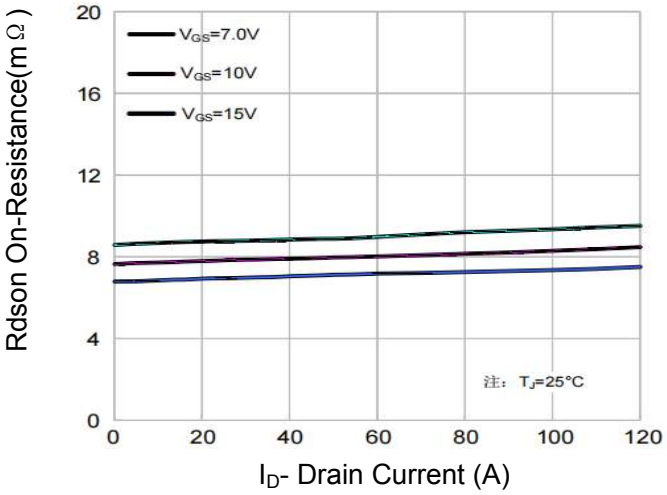


Figure 3 Rdson- Drain Current

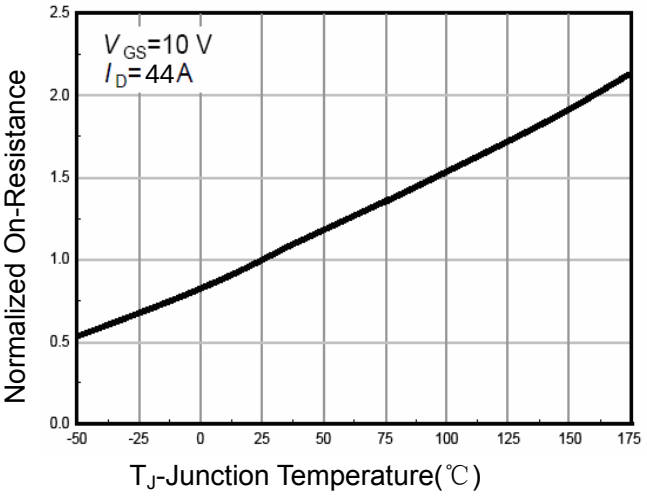


Figure 4 Rdson-JunctionTemperature

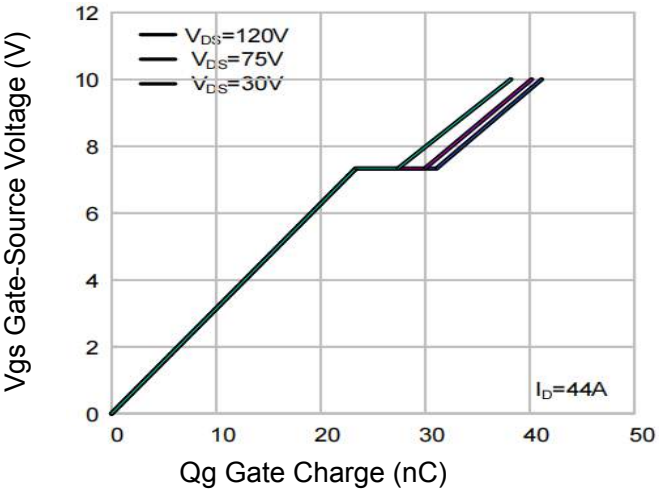


Figure 5 Gate Charge

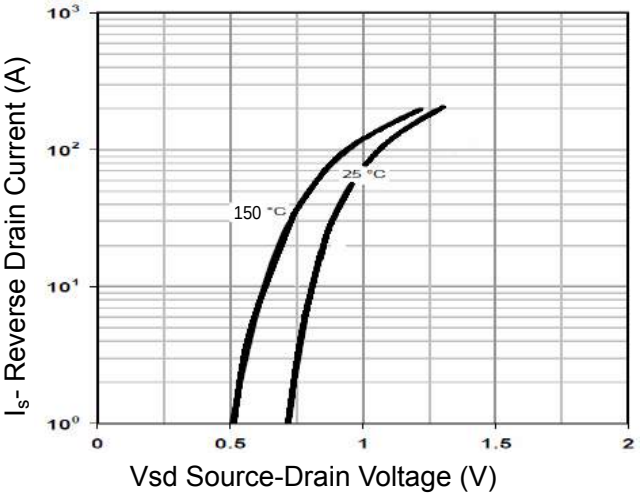


Figure 6 Source- Drain Diode Forward

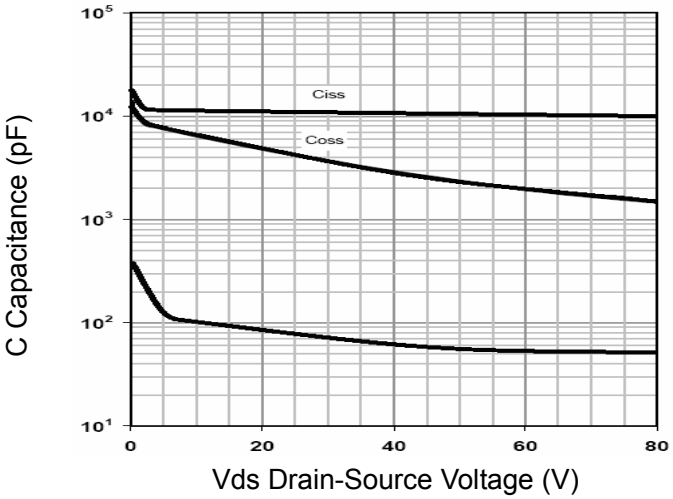


Figure 7 Capacitance vs Vds

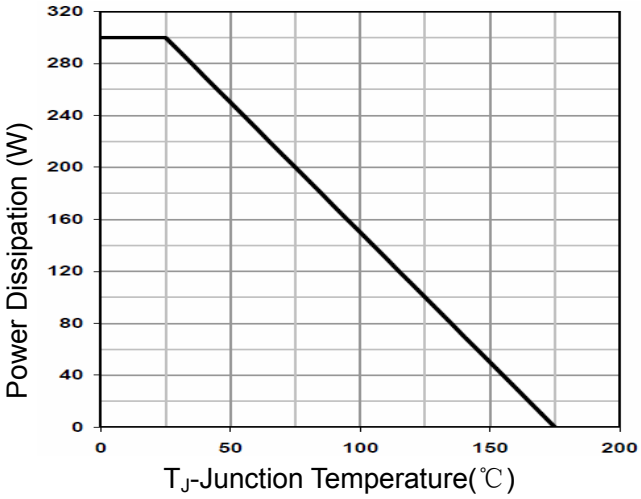


Figure 9 Power De-rating

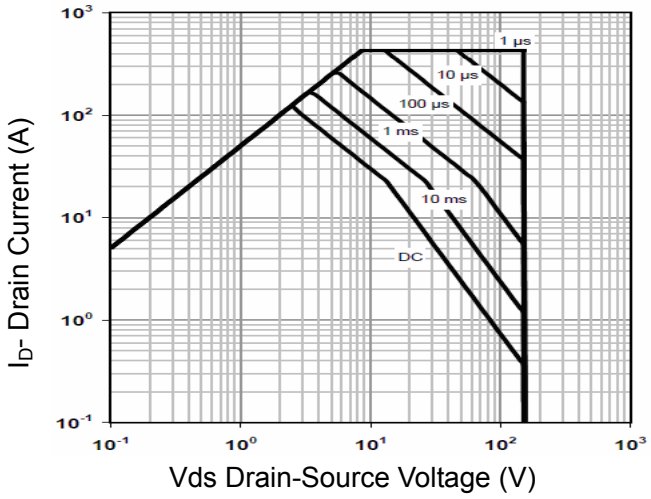


Figure 8 Safe Operation Area

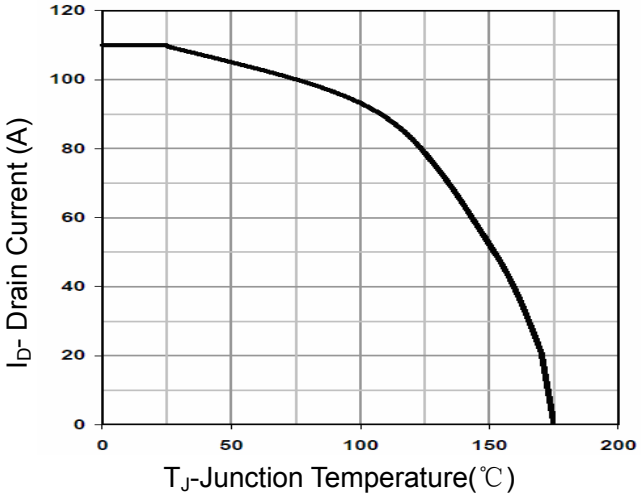


Figure 10 Current De-rating

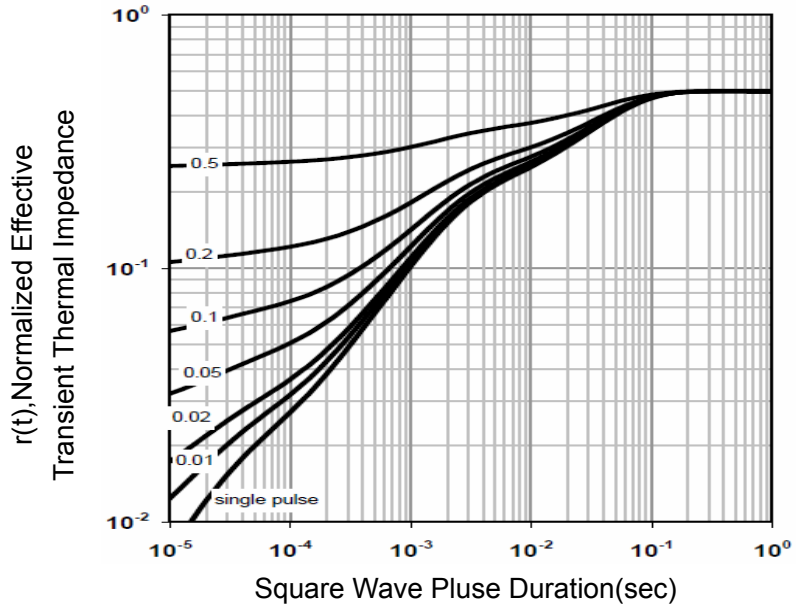
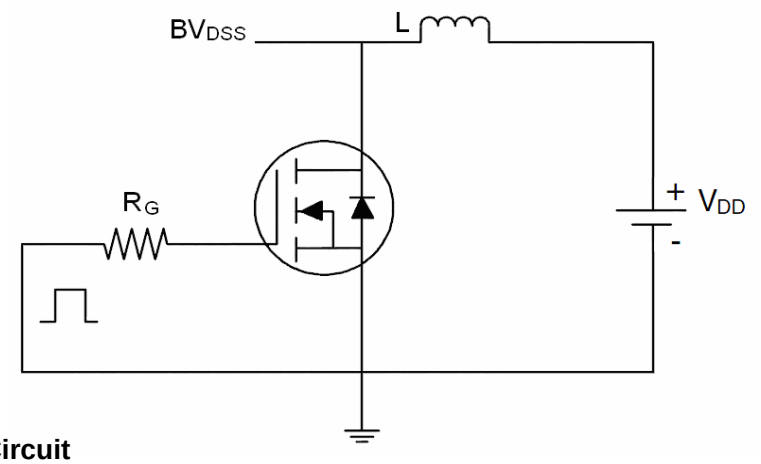


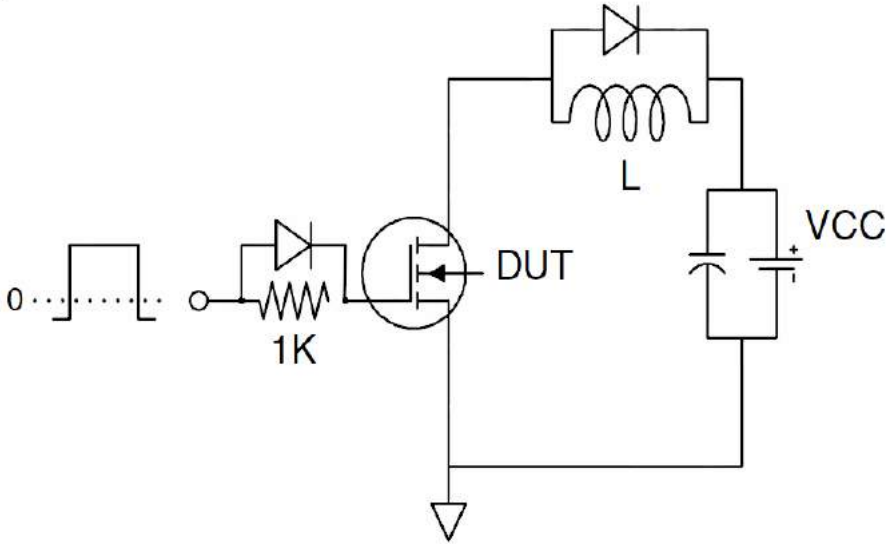
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

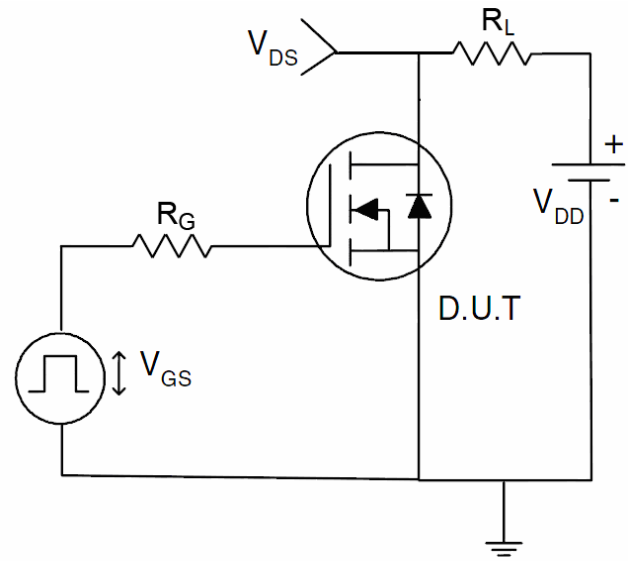
1) E_{AS} test Circuit



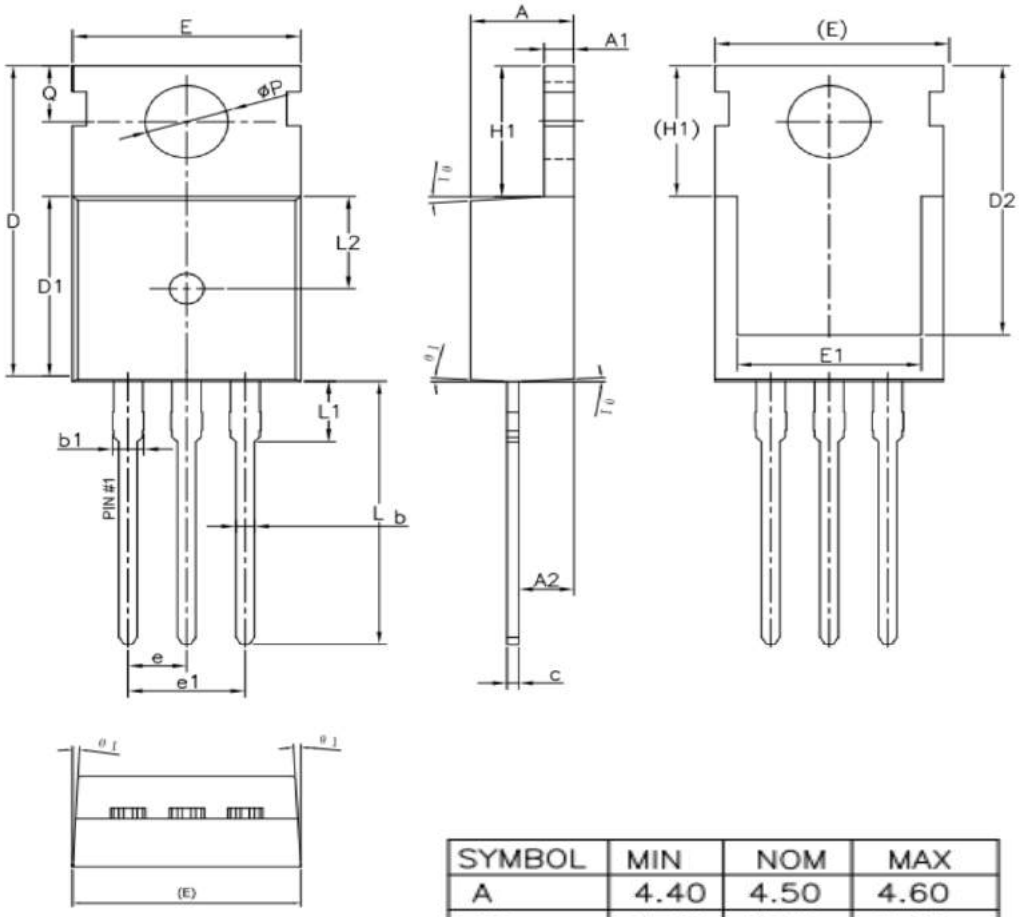
2) Gate charge test Circuit



3) Switch Time Test Circuit



TO-220-3L Package Information



SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	—	0.90
b1	1.27	—	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	—	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54BSC		
e1	5.08BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	—	—	3.50
L2	4.60REF		
øP	3.55	3.60	3.65
Q	2.73	—	2.87
θ1	1°	3°	5°

Customer Service

Sales and Service:

zj@ztasemi.com