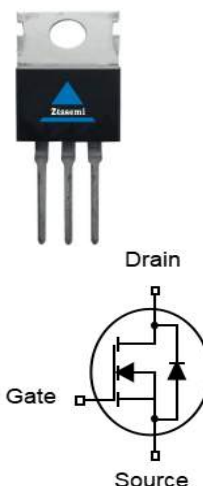


Features

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

V_{DS}	200	V
$R_{DS(on),TYP}@ V_{GS}=10V$	9	m Ω
I_D	110	A

TO-220


Part ID	Package Type	Marking	Packing
ZTG10N20	TO-220	ZTG10N20	1000pcs/Tape

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	200	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	$T_c = 25^\circ\text{C}$ 440	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_c = 25^\circ\text{C}$	110	A
		$T_c = 100^\circ\text{C}$	73	A
P_D	Maximum Power Dissipation	280	W	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.45	$^\circ\text{C}/\text{W}$	
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 1)	600	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	200	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =200V, V _{GS} =0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-State Resistance	V _{GS} =10V, I _D =50A	--	9	11	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V _{DS} =100V, V _{GS} =0V, f=1MHz	--	4680	--	pF
Coss	Output Capacitance		--	420	--	pF
Crss	Reverse Transfer Capacitance		--	11	--	pF
Rg	Gate Resistance	f=1MHz	--	5.3	--	Ω
Qg	Total Gate Charge	V _{DS} =100V, I _D =44A, V _{GS} =10V	--	63	--	nC
Qgs	Gate-Source Charge		--	28	--	nC
Qgd	Gate-Drain Charge		--	7.8	--	nC
Switching Characteristics (Note 2)						
Td(on)	Turn-on Delay Time	V _{DD} =100V, I _D =44A, R _G =1.6Ω, V _{GS} =10V	--	22	--	ns
Tr	Turn-on Rise Time		--	40	--	ns
Td(off)	Turn-Off Delay Time		--	65	--	ns
Tf	Turn-Off Fall Time		--	18	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
ISD	Source-Drain Current (Body Diode)		--	--	110	A
VSD	Forward on voltage	I _S =88A, V _{GS} =0V	--	--	1.4	V
Trr	Reverse Recovery Time	T _J =25°C, I _F =44A,	--	130	--	ns
Qrr	Reverse Recovery Charge	di/dt=100A/μs	--	0.7	--	nC

Notes:

- EAS condition : T_J=25°C, V_{DD}=80V, V_G=10V, L=0.5mH, R_G=25Ω
- 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(MAX)=150°C. The SOA curve provides a single pulse rating.

Typical Electrical and Thermal Characteristics

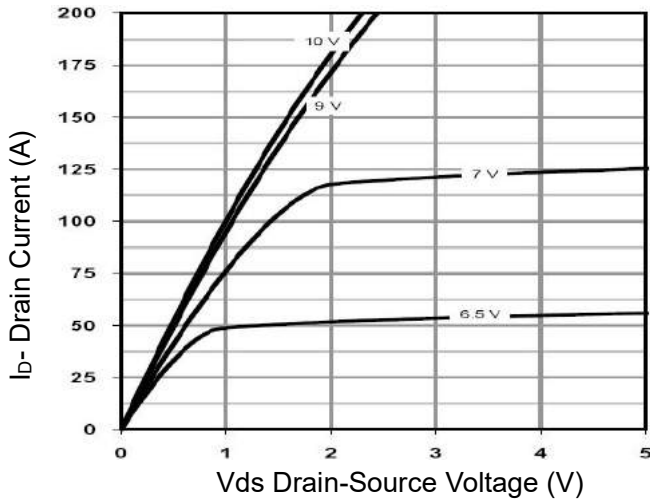


Figure 1 Output Characteristics

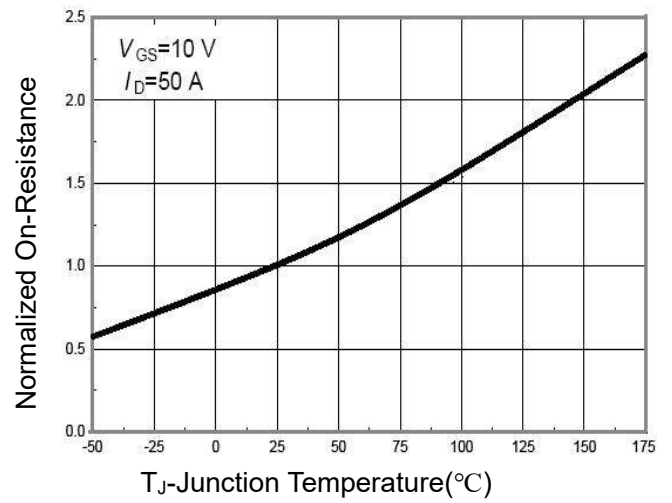


Figure 4 Rdson-Junction Temperature

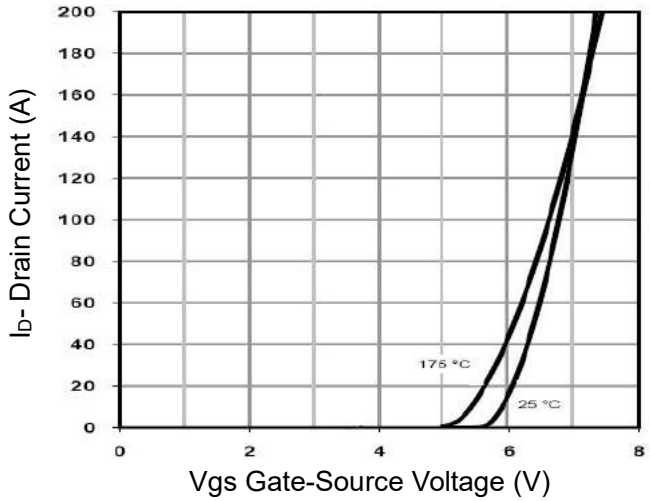


Figure 2 Transfer Characteristics

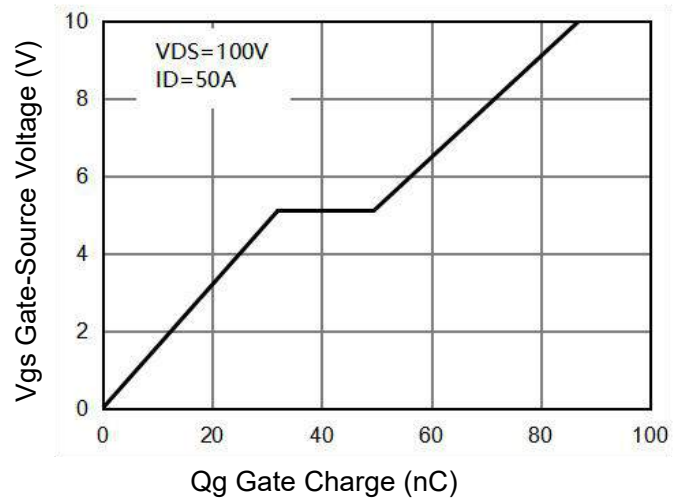


Figure 5 Gate Charge

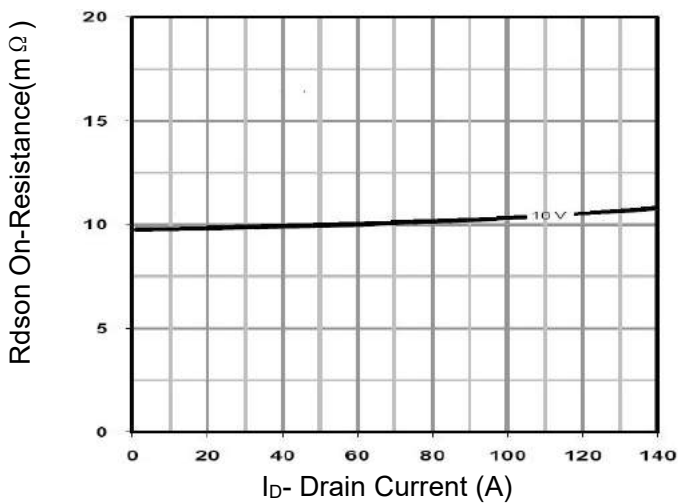


Figure 3 Rdson- Drain Current

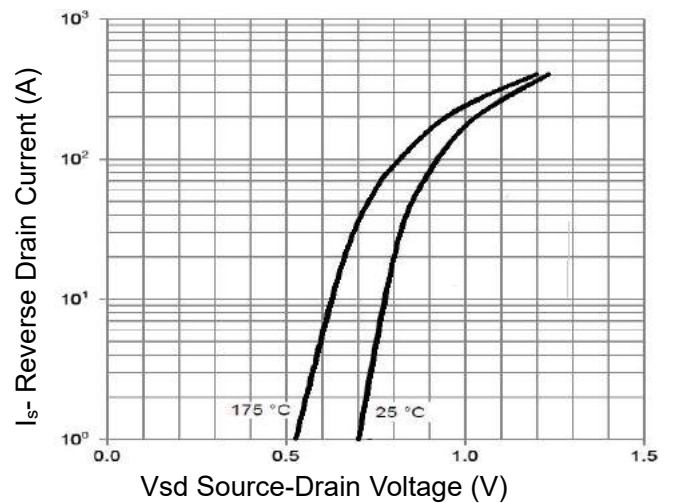


Figure 6 Source- Drain Diode Forward

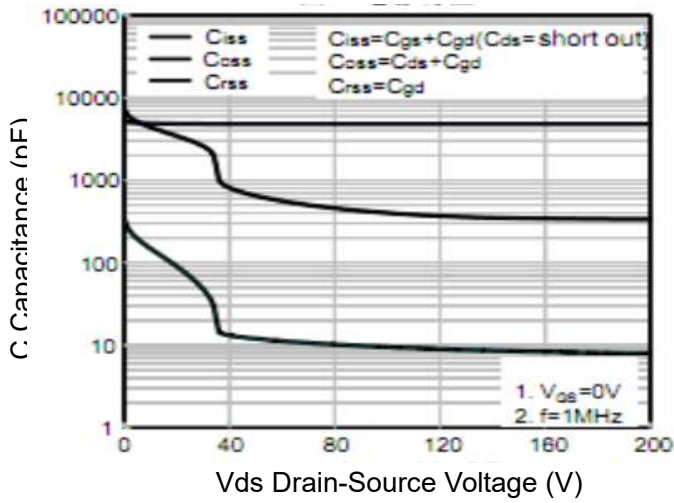


Figure 7 Capacitance vs Vds

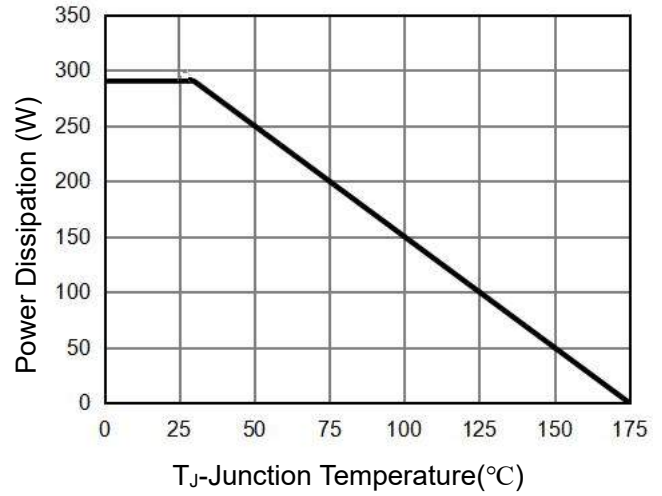


Figure 9 Power De-rating

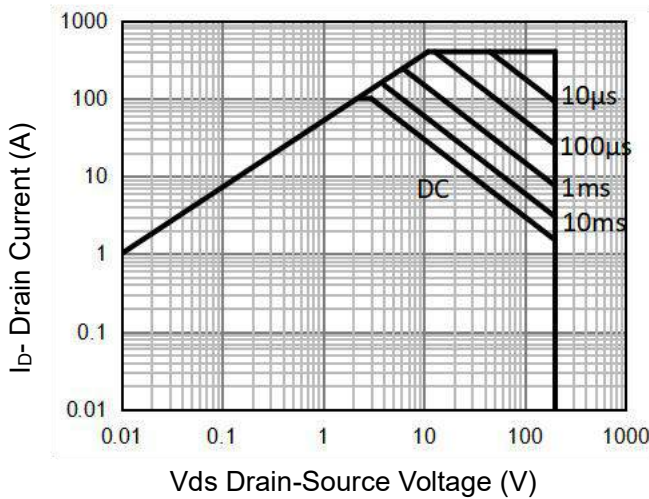


Figure 8 Safe Operation Area (Note 3)

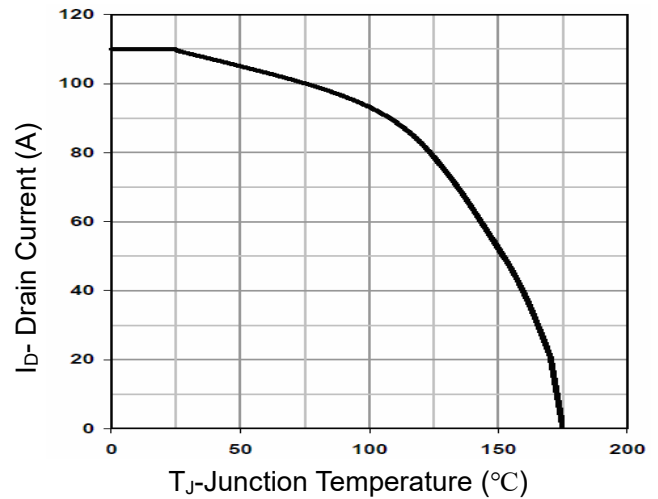


Figure 10 Current De-rating

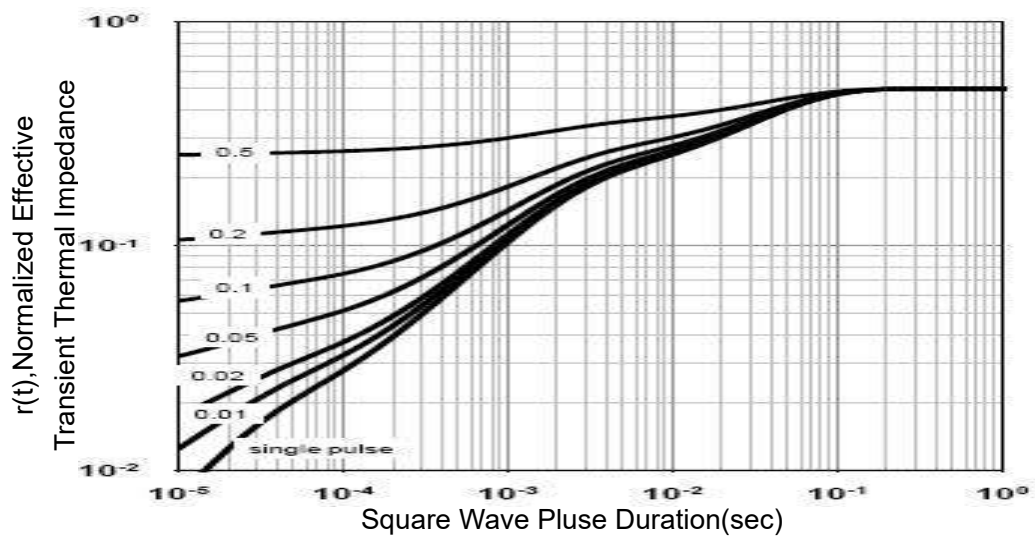
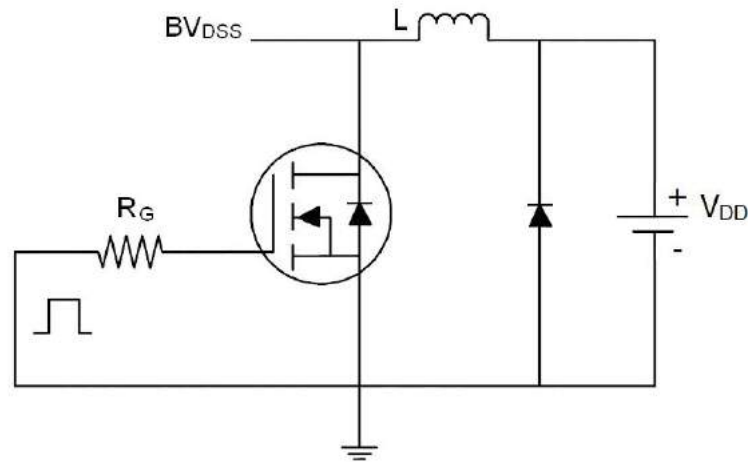


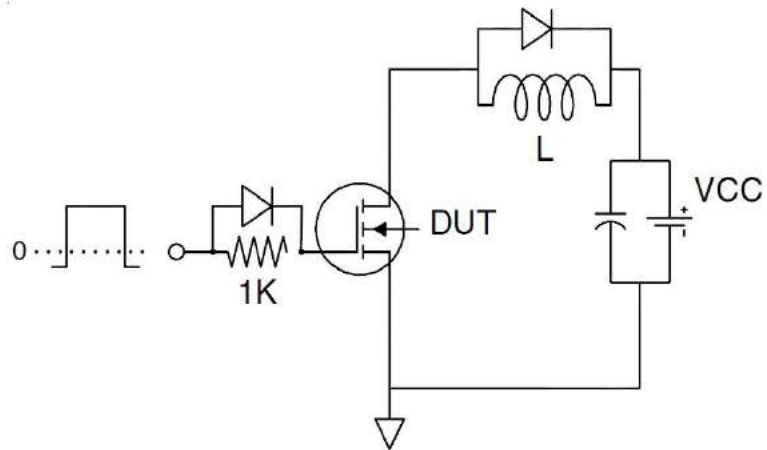
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

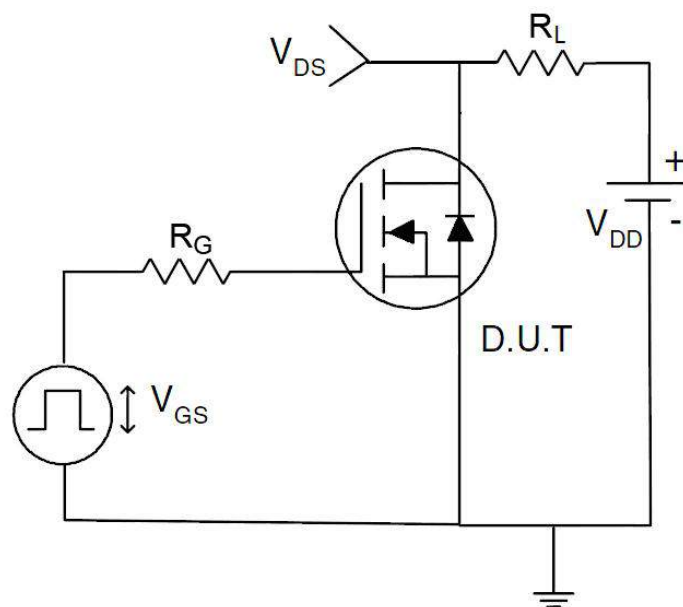
1) E_{AS} test Circuit



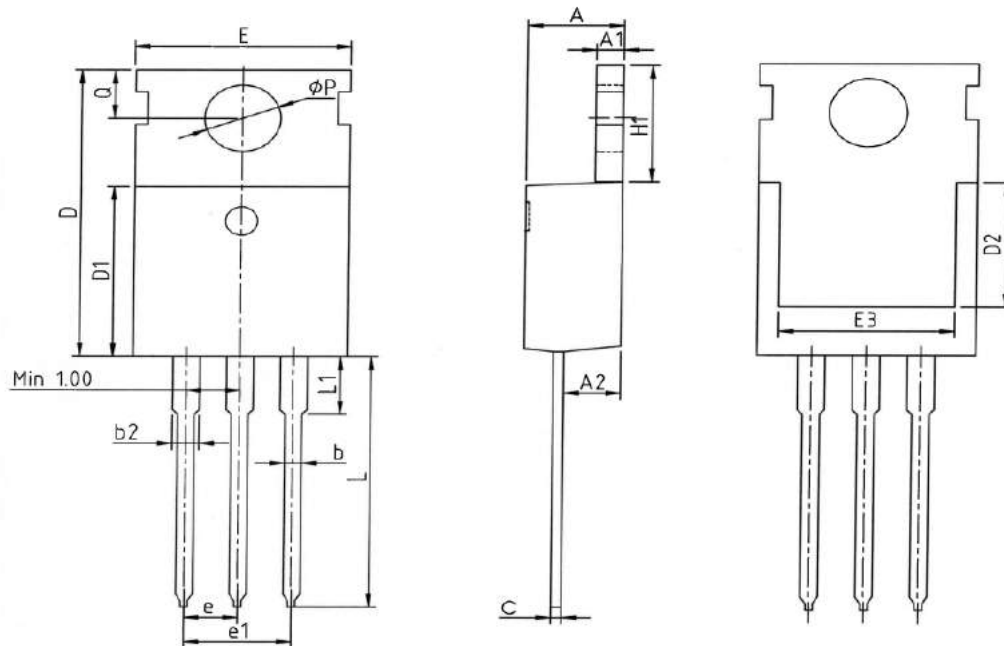
2) Gate charge test Circuit



3) Switch Time Test Circuit



TO-220-3L Package Information



SYMBOL	MIN	NOM	MAX
A	4.37	4.57	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.45	0.50	0.60
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	6.30	7.10
E	9.70	10.00	10.30
E3	7.00	7.80	8.60
e	2.54		BSC
e1	5.08		BSC
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1	-	3.10	3.40
ΦP	3.40	3.60	3.80
Q	2.60	2.80	3.00

Customer Service

Sales and Service:

zj@ztasemi.com