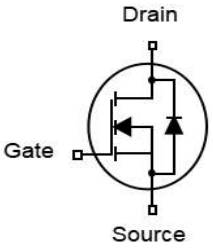
Features

- N-Channel
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Pb-free lead plating; RoHS compliant
- 100% EAS Tested

V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	6.8	mΩ
I_D	85	A

TO-220



Part ID	Package Type	Marking	Packing
ZTG068N10	TO-220	ZTG068N10	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		100	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 3)	T_C =25°C	340	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 2)	T_C =25°C	85	A
		T_C =100°C	58	A
P_D	Maximum Power Dissipation		104	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.2	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 1)		330	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	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,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	2.4	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=40A	--	6.8	8.3	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=50V,V_{GS}=0V, f=1MHz	--	2902	--	pF
Coss	OutputCapacitance		--	230	--	pF
Crss	ReverseTransferCapacitance		--	7.5	--	pF
Rg	Gate Resistance	f=1MHz	--	2.6	--	Ω
Qg	Total Gate Charge	V_{DS}=50V,I_D=40A, V_{GS}=10V	--	40	--	nC
Qgs	Gate-SourceCharge		--	15.1	--	nC
Qgd	Gate-DrainCharge		--	5.1	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DS}=50V, I_D =40A, R_G=6Ω, V_{GS}=10V	--	10	--	ns
Tr	Turn-on Rise Time		--	6	--	ns
Td(off)	Turn-Off Delay Time		--	51	--	ns
Tf	Turn-Off Fall Time		--	9	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode)		--	--	85	A
V_{SD}	Forward on voltage	I_S=40A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	T_j=25℃,I_F =40A, di/dt=100A/μs	--	95	--	ns
Qrr	Reverse Recovery Charge		--	110	--	nC

Notes

1. L=0.5mH, V_{DD}=50V, Start T_J=25℃.
2. Limited by maximum junction temperature.
3. Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Characteristics T_J = 25ºC, unless otherwise noted

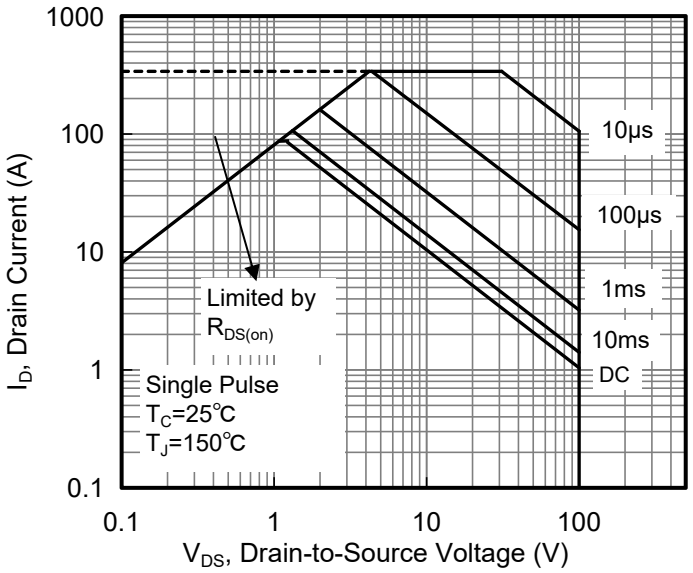


Figure 1. Maximum Safe Operating Area

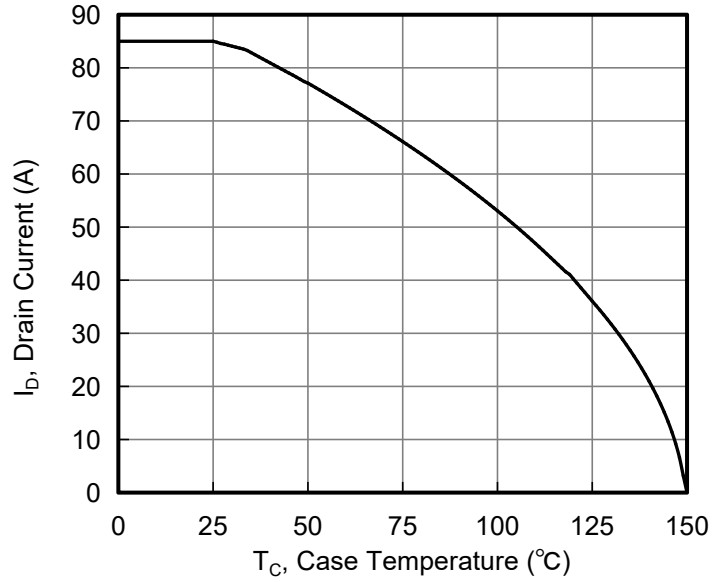


Figure 2. Maximum Continuous Drain Current vs Case Temperature

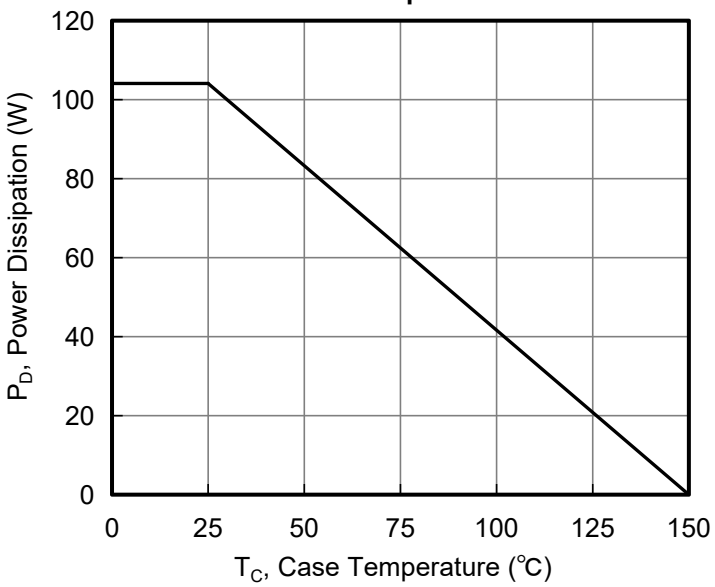


Figure 3. Maximum Power Dissipation vs Case Temperature

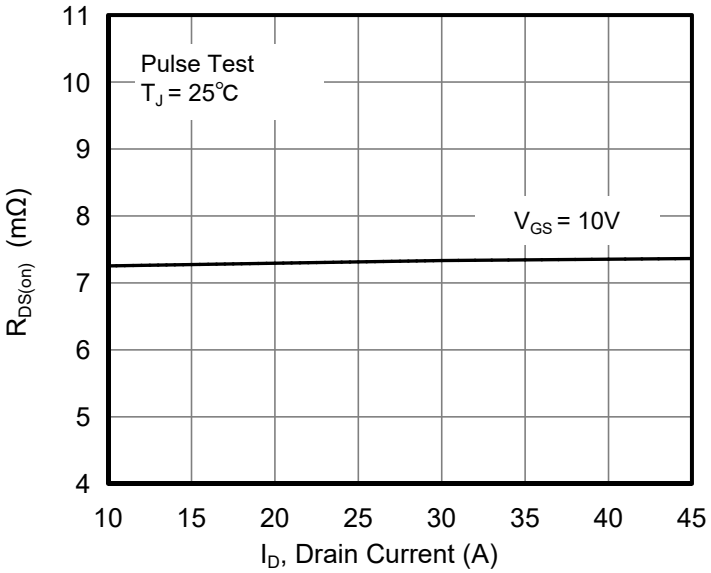


Figure 4. Drain-to-Source On Resistance vs Drain Current

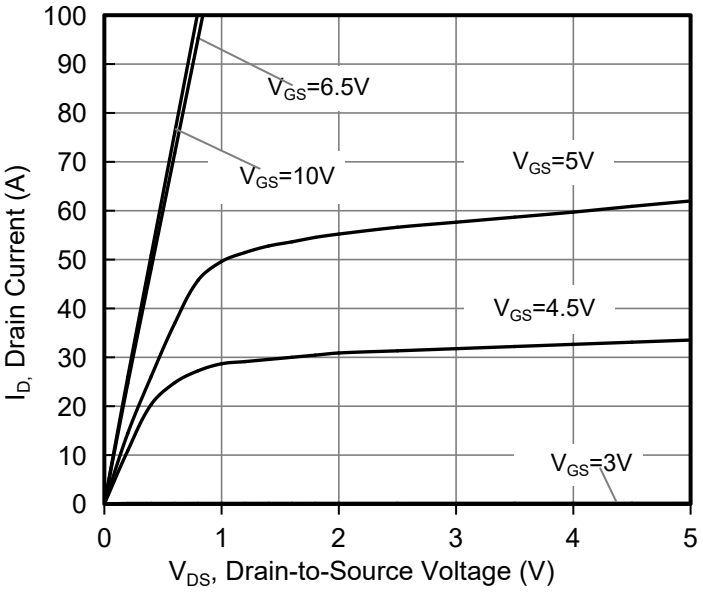


Figure 5. Typical output Characteristics

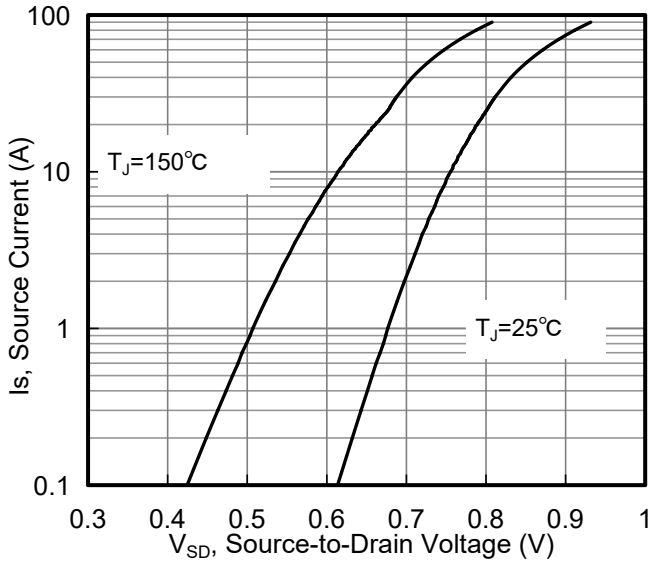


Figure 6. Typical Body Diode Transfer Characteristics

Typical Characteristics T_J = 25ºC, unless otherwise noted

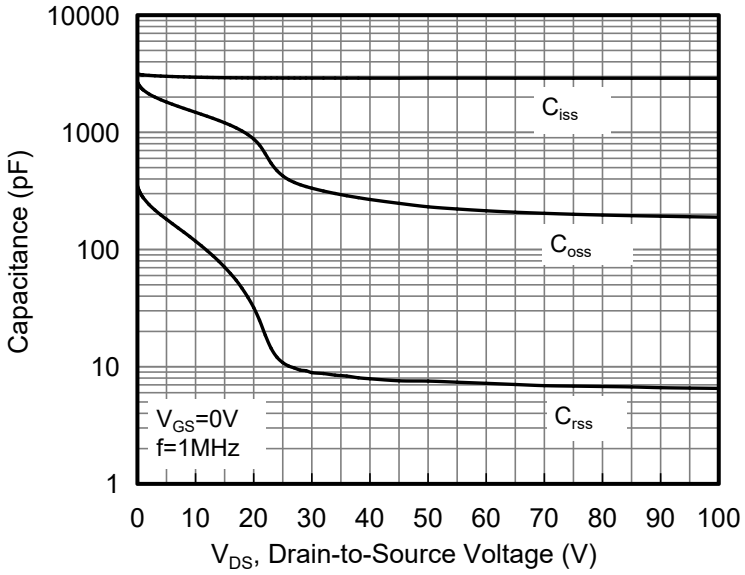


Figure 7 . Capacitance Characteristics

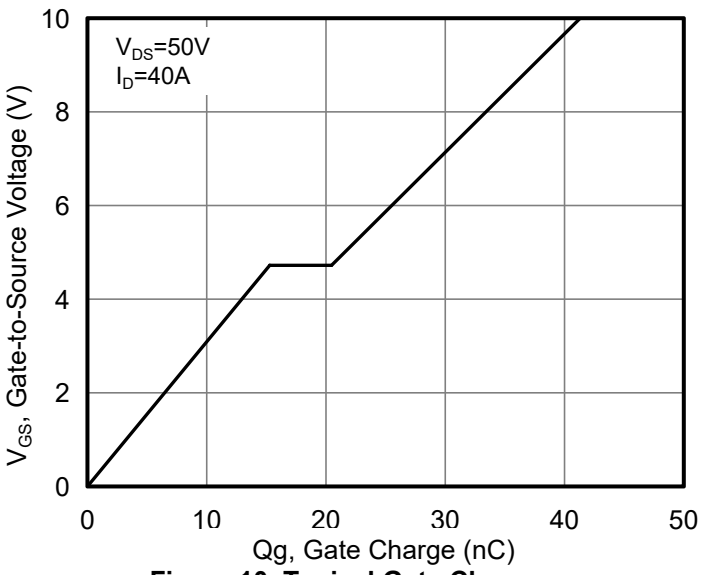


Figure 10. Typical Gate Charge vs Gate to Source Voltage

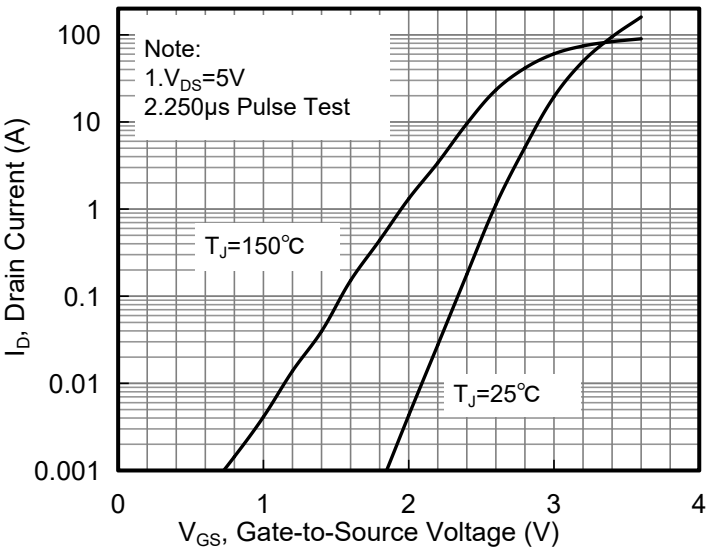


Figure 8 Typical Transfer Characteristics

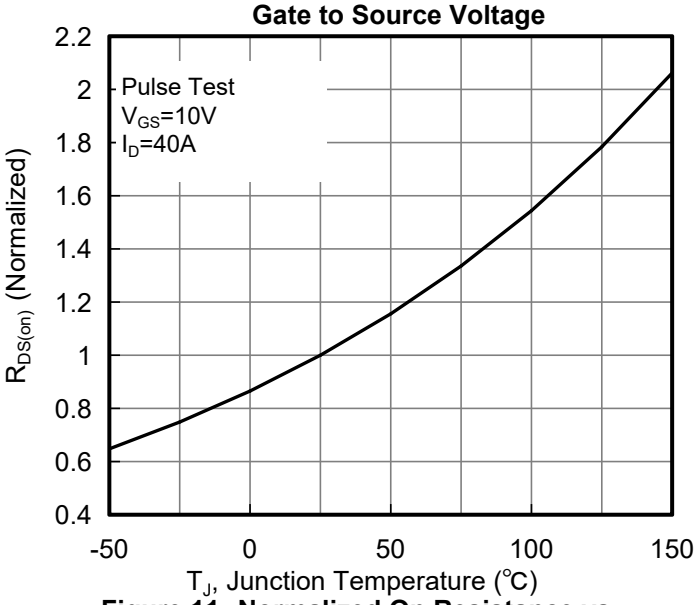


Figure 11. Normalized On Resistance vs Junction Temperature

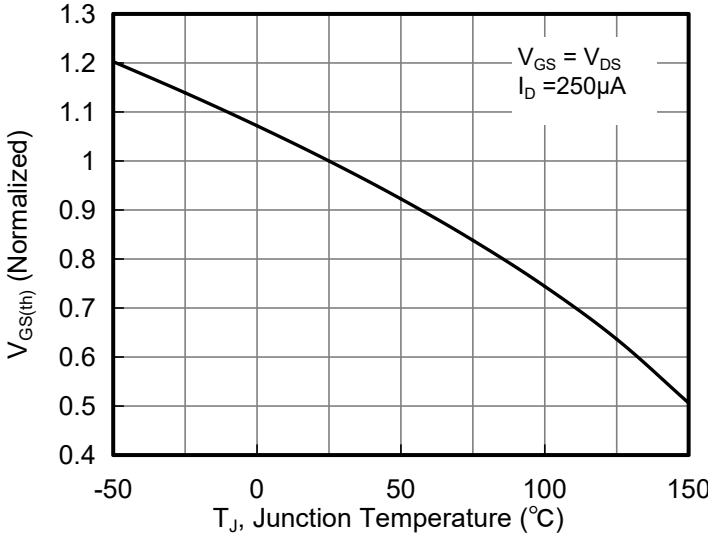


Figure 9 . Normalized Threshold Voltage vs Junction Temperature

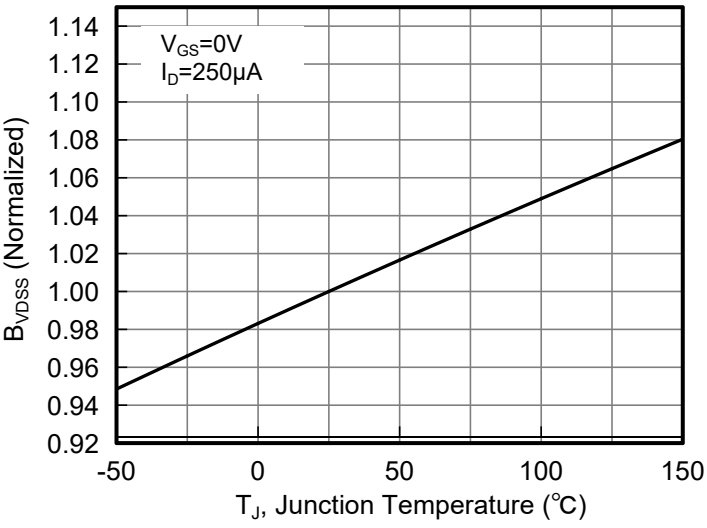


Figure 12. Normalized Breakdown Voltage vs Junction Temperature

Typical Characteristics T_J = 25ºC, unless otherwise noted

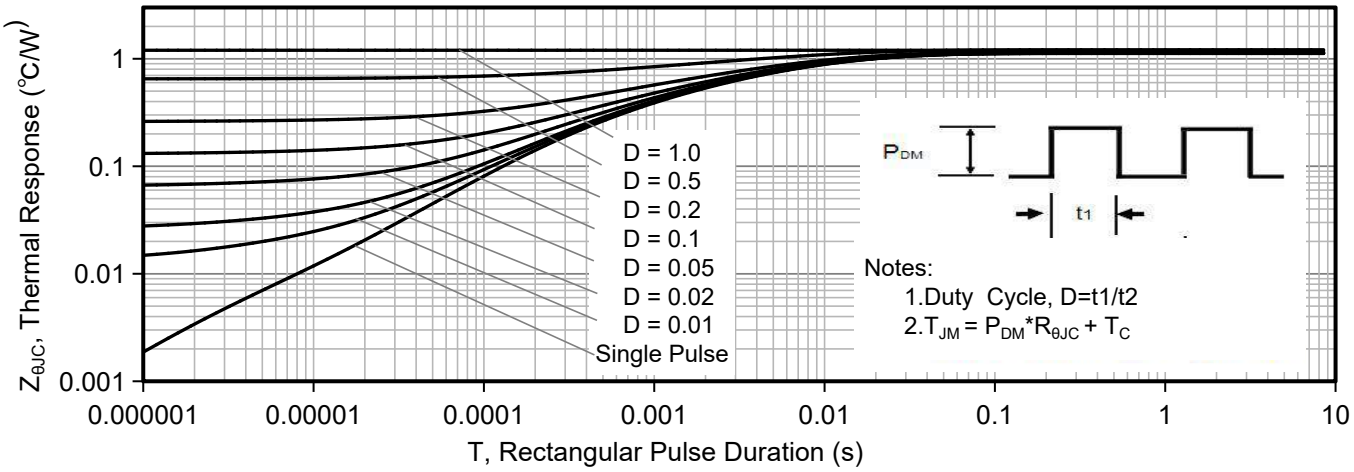


Figure 13. Maximum Effective Thermal Impedance , Junction to Case

Figure A：Gate Charge Test Circuit and Waveform

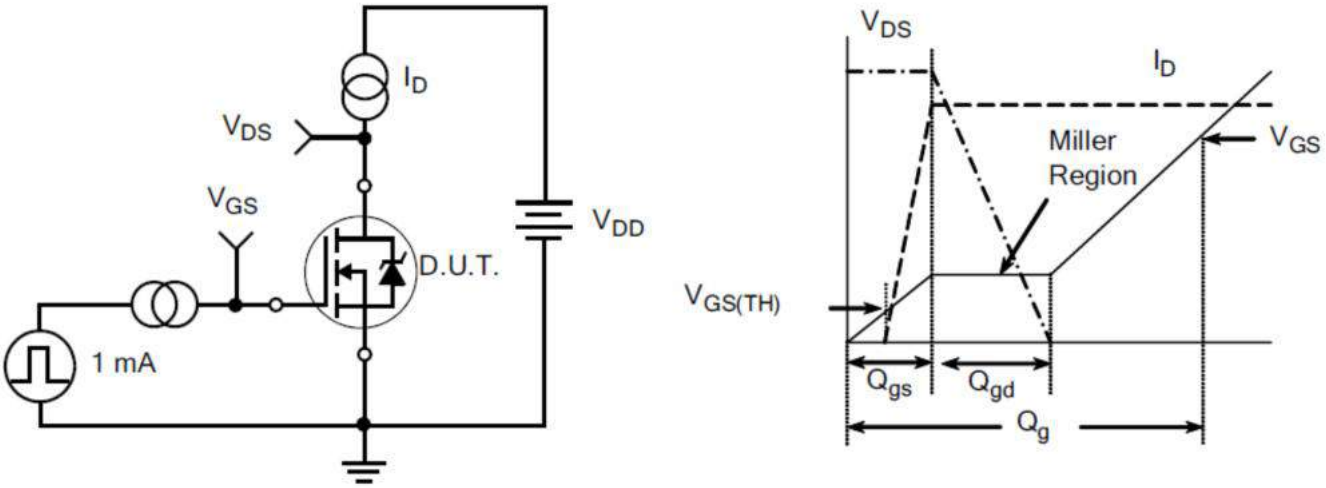


Figure B：Resistive Switching Test Circuit and Waveform

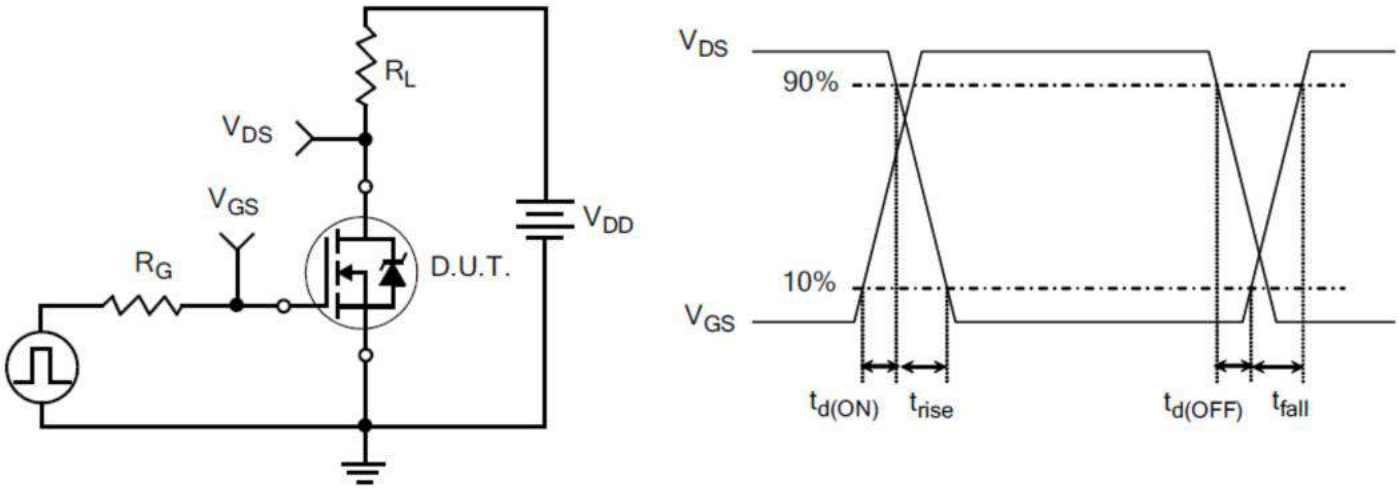
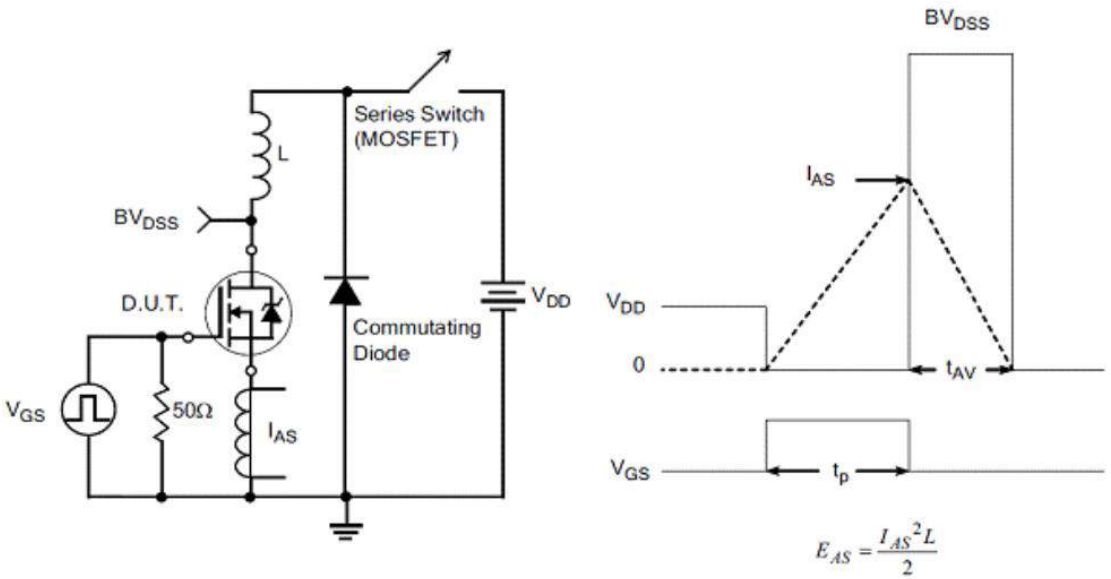
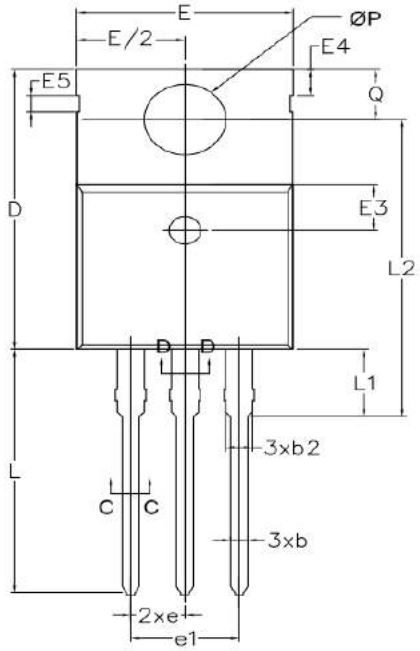
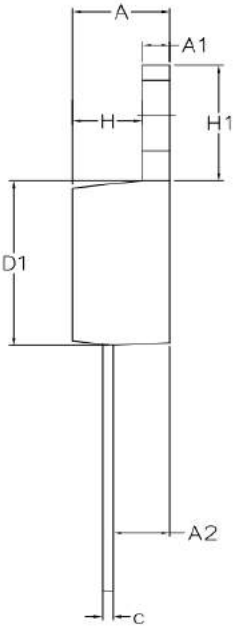


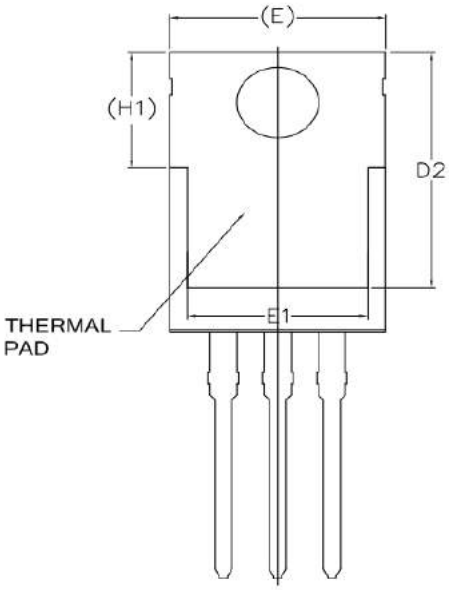
Figure C：Unclamped Inductive Switching Test Circuit and Waveform

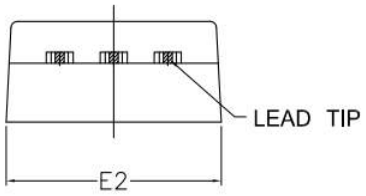


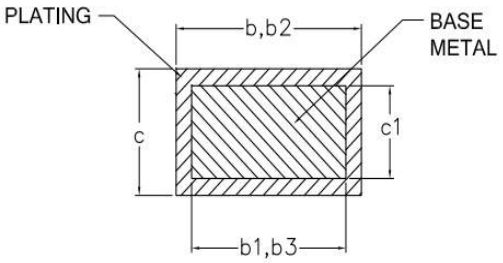
TO-220-3L Package Information











SECTION:C-C&D-D

SYMBOLS	COMMON		
	MM		
	MIN.	NOM.	MAX.
A	4.47	4.57	4.67
A1	1.20	1.30	1.40
A2	2.35	2.67	2.90
b	0.71	0.80	0.91
b1	0.71	0.80	0.86
b2	1.22	1.27	1.36
b3	1.22	1.27	1.31
c	0.47	0.50	0.60
c1	0.47	0.50	0.55
D	14.70	15.30	15.80
D1	8.90	9.00	9.47
D2	11.75	/	13.60
E	9.70	/	10.37
E1	7.00	8.44	8.89
E2	9.80	10.11	10.20
E3	2.40	2.50	2.60
E4	1.27	1.42	1.57
E5	0.90TYP		
e	2.54BSC		
e1	5.08BSC		
H	3.00	3.27	3.40
H1	6.15	6.30	6.45
L	12.90	13.45	14.80
L1	2.54	3.69	3.84
L2	12.13	16.25	16.5
ØP	3.60	3.84	3.90
Q	2.65	2.74	2.95

Customer Service

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