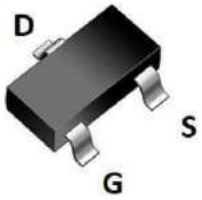
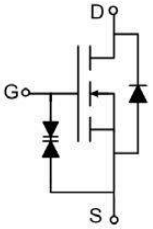
Features

- N-Channel
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired
- ESD Rating: HBM 2KV

V_{DS}	20	V
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	12.3	Ω
$R_{DS(on),TYP}$@ V_{GS}=2.5 V	15.6	Ω
I_D	7.2	A

SOT-23





Part ID	Package Type	Marking	Packing
ZT3416	SOT-23	3416	3000pcs/Reel

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		±10	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		20	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 1)	T_C =25°C	28.8	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	7.2	A
		T_C =100°C	4.5	A
P_D	Maximum Power Dissipation	T_C =25°C	1.33	W
		T_C =100°C	0.53	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		93	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 2)		25	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	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V,V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±10V,V_{DS}=0V	--	--	10	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	0.5	--	1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V,I_D=5A	--	12.3	16	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=2.5V, I_D=4A	--	15.6	20.6	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz	--	666	--	pF
Coss	OutputCapacitance		--	148	--	pF
Crss	ReverseTransferCapacitance		--	88	--	pF
Qg	Total Gate Charge	V_{DS}=10V,I_D=5A, V_{GS}=4.5V	--	9	--	nC
Qgs	Gate-SourceCharge		--	1.5	--	nC
Qgd	Gate-DrainCharge		--	1.9	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DS}=10V, R_L=2Ω, R_G=3Ω, V_{GS}=4.5V	--	10	--	ns
Tr	Turn-on Rise Time		--	33	--	ns
Td(off)	Turn-Off Delay Time		--	54	--	ns
Tf	Turn-Off Fall Time		--	50	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode)		--	--	7.2	A
V_{SD}	Forward on voltage (Note 3)	I_S=5A,V_{GS}=0V	--	--	1.2	V

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.
2.E_{AS} condition: T_J=25℃,V_{DD}=10V,V_G=10V, Rg=25Ω, L=0.5mH.
3.Repetitive Rating: Pulse width limited by maximum junction temperature.

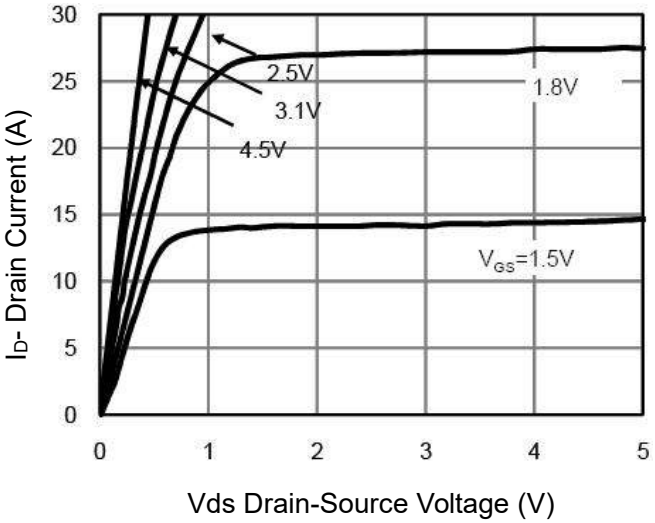


Figure 1. Output Characteristics

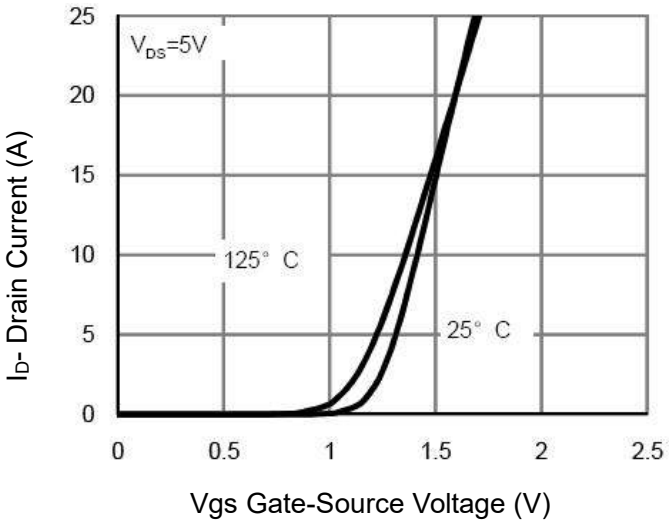


Figure 2. Transfer Characteristics

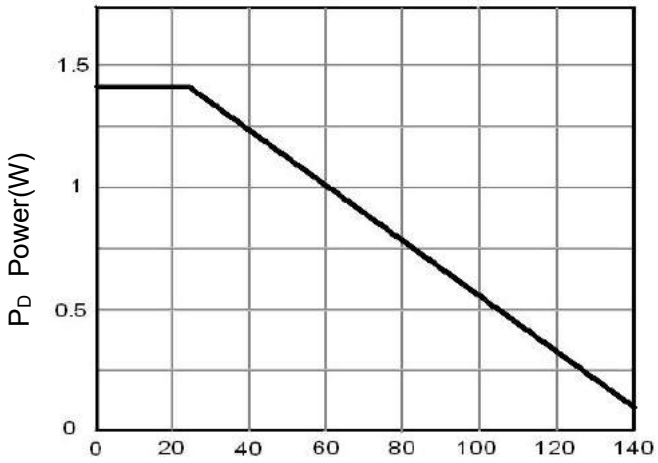


Figure 3. Power Dissipation

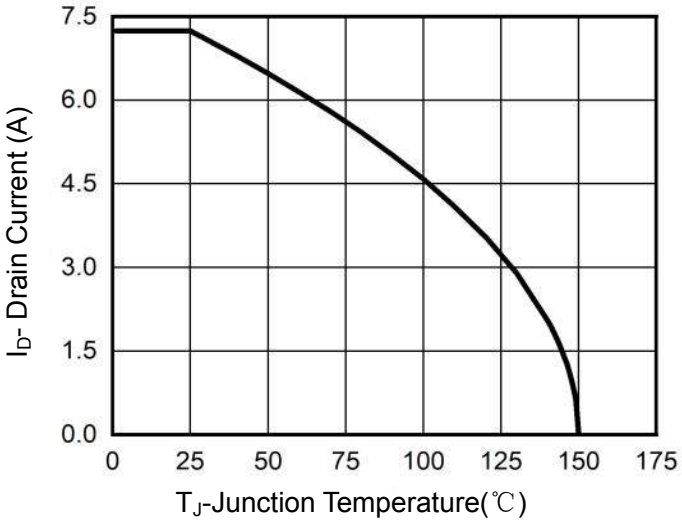


Figure 4. Drain Current

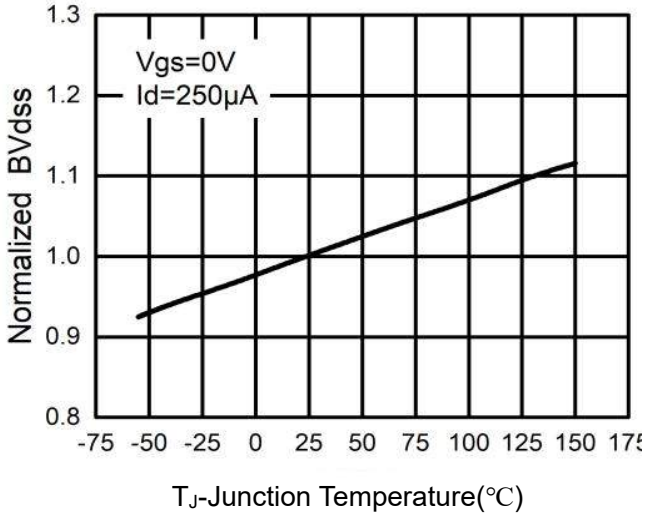


Figure 5. BV_{DSS} vs Junction Temperature

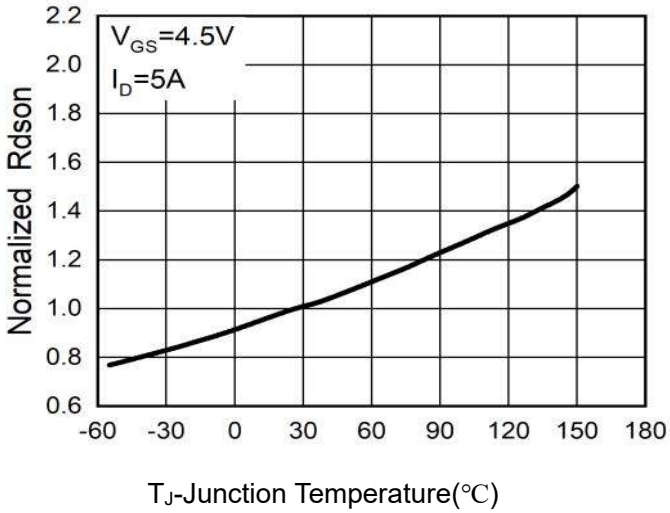


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

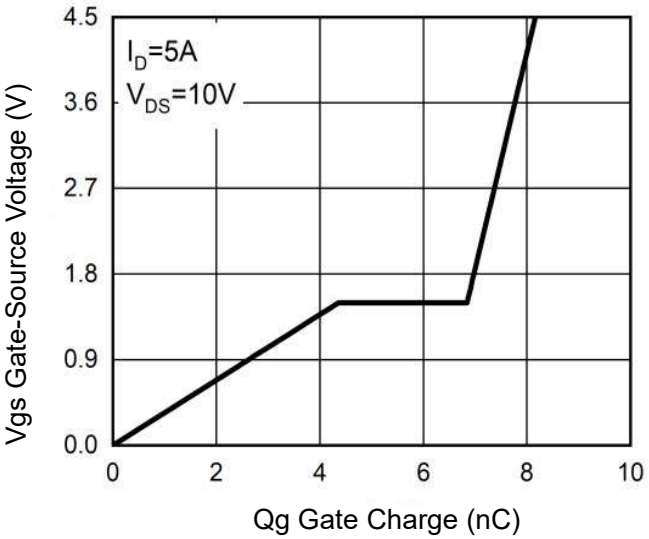


Figure 7. Gate Charge Waveforms

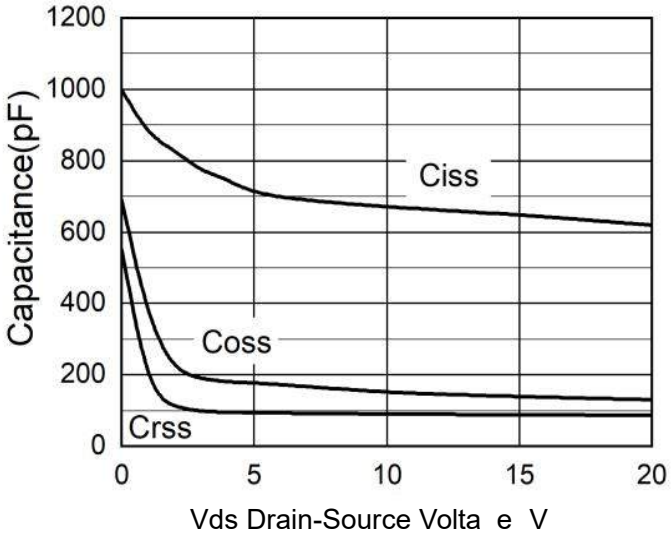


Figure 8. Capacitance

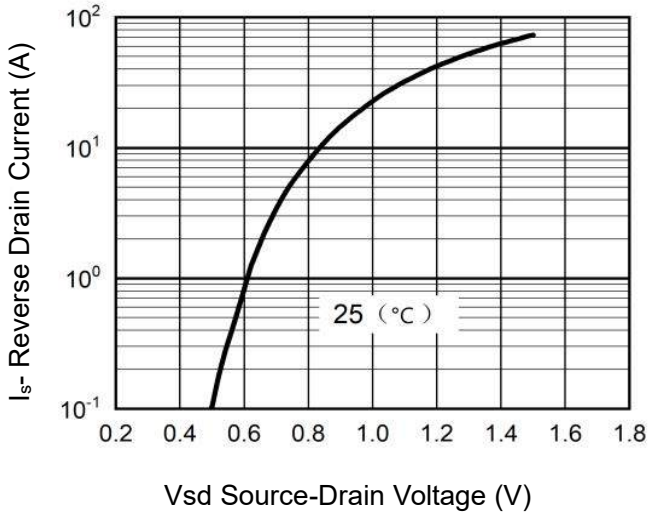


Figure 9. Body-Diode Characteristics

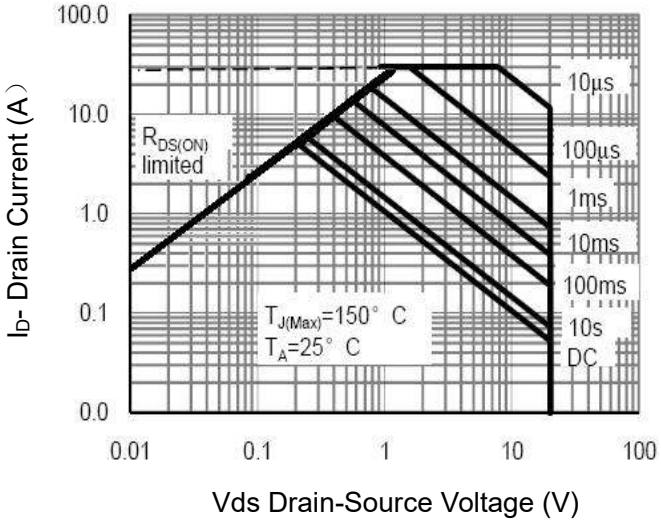


Figure 10. Maximum Safe Operating Area

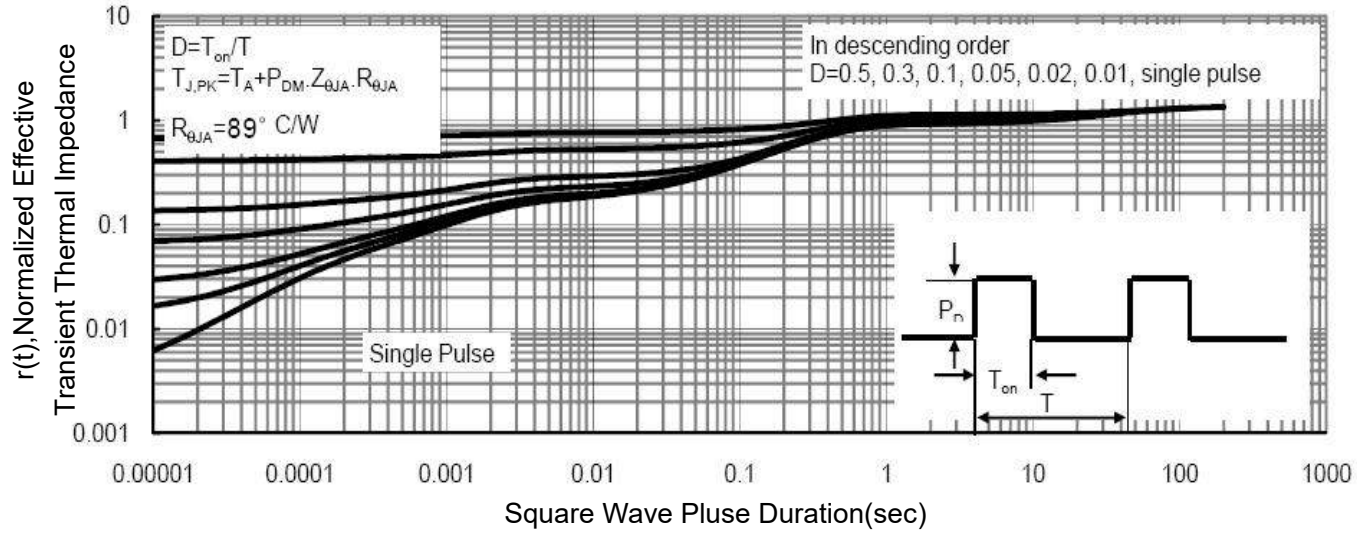


Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

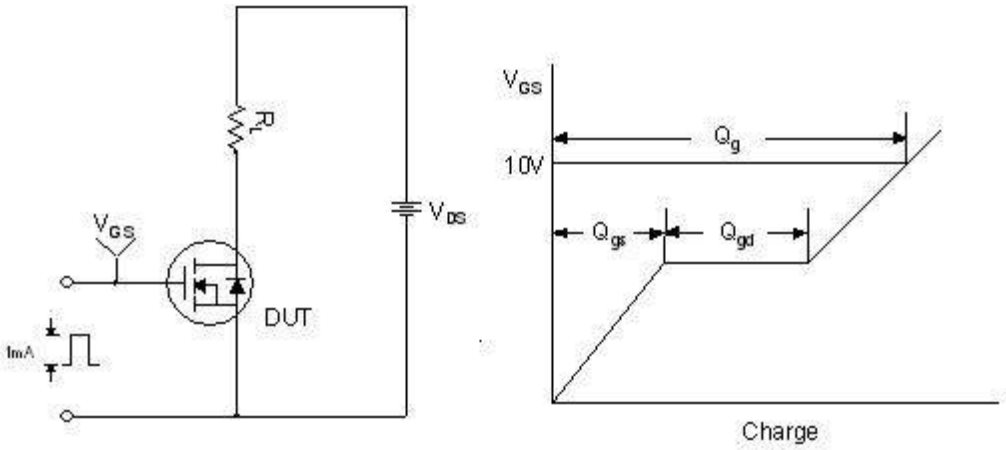


Figure 1. Gate Charge Test Circuit & Waveform

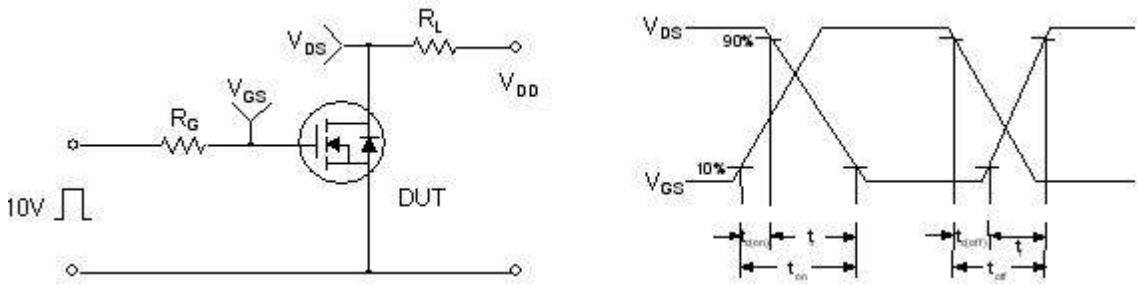


Figure 2. Resistive Switching Test Circuit & Waveforms

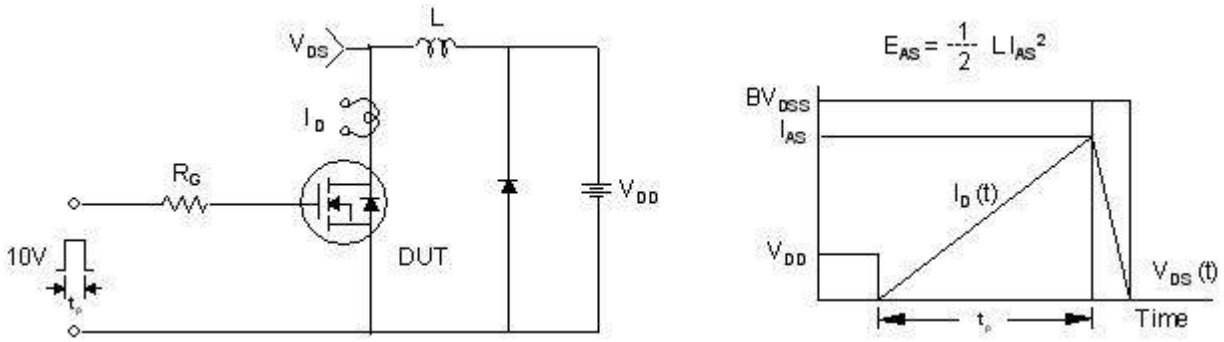
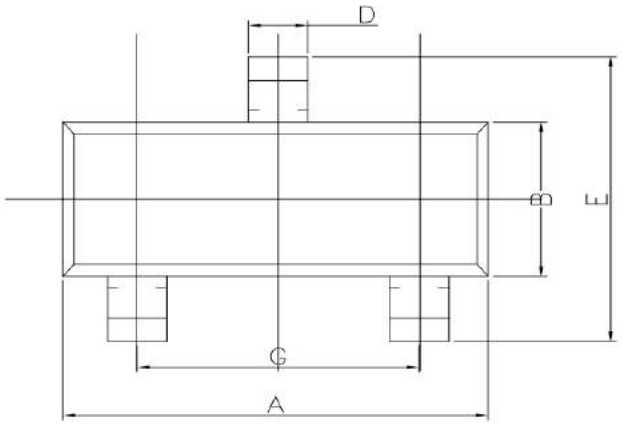
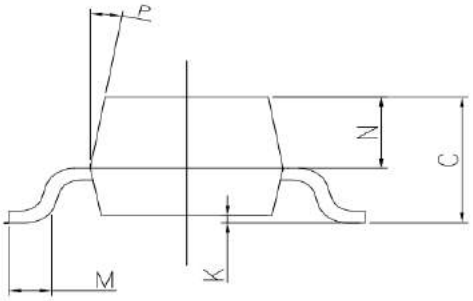
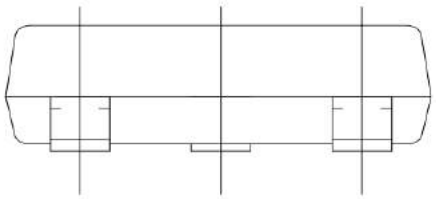


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

SOT-23 Package Information







DIM	MILLIMETERS
A	2.90 ± 0.1
B	1.30 ± 0.10
C	0.90 ~ 1.15
D	0.40 ± 0.1
E	2.40 ± 0.15
G	1.90 ± 0.10
K	0.00~0.10
M	0.30MIN
N	0.60 ± 0.10
P	10°TYP

Customer Service

Sales and Service:

zj@ztasemi.com