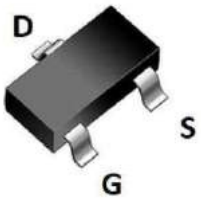
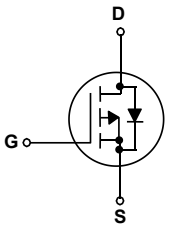
Features

- P-Channel
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

V_{DS}	-20	V
$R_{DS(on),TYP}$@ V_{GS}=-4.5 V	34	mΩ
$R_{DS(on),TYP}$@ V_{GS}=-2.5 V	44	mΩ
I_D	-4	A

SOT-23





Part ID	Package Type	Marking	Packing
ZT2305C	SOT-23	2305	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		±12	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	-16	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	-4	A
		T_C =100°C	-2.5	A
P_D	Maximum Power Dissipation	T_C =25°C	1.1	W
		T_C =100°C	0.45	W/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Ambient		112	°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}=±12V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-0.55	-0.75	-1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V,I_D=-3A	--	34	45	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-2.5V,I_D=-2A	--	44	60	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=-10V,V_{GS}=0V, f=1MHz	--	852	--	pF
Coss	OutputCapacitance		--	149	--	pF
Crss	ReverseTransferCapacitance		--	89	--	pF
Qg	Total Gate Charge	V_{DS}=-10V,I_D=-3A, V_{GS}=-4.5V	--	9.2	--	nC
Qgs	Gate-SourceCharge		--	1.7	--	nC
Qgd	Gate-DrainCharge		--	2.1	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DS}=-15V, R_L=2.5Ω, R_G=3Ω, V_{GS}=-4.5V	--	11	--	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)		--	--	-4	A
V_{SD}	Forward on voltage (Note 3)	I_S =-3A,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}=-20V,V_G=-10V, Rg=25Ω, L=0.5mH.
3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

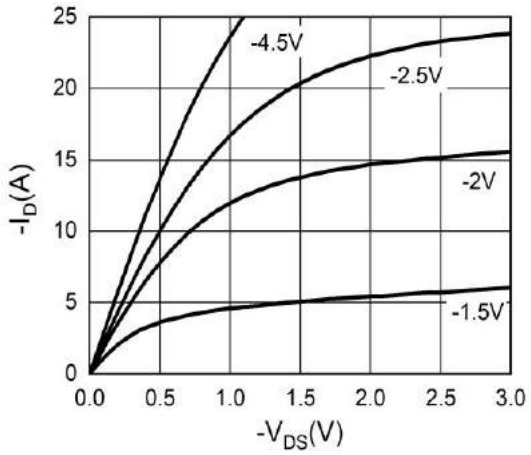


Figure 1. Output Characteristics

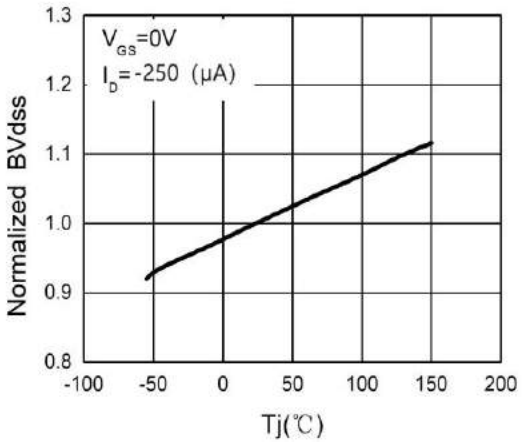


Figure 4. BV_{DSS} vs Junction Temperature

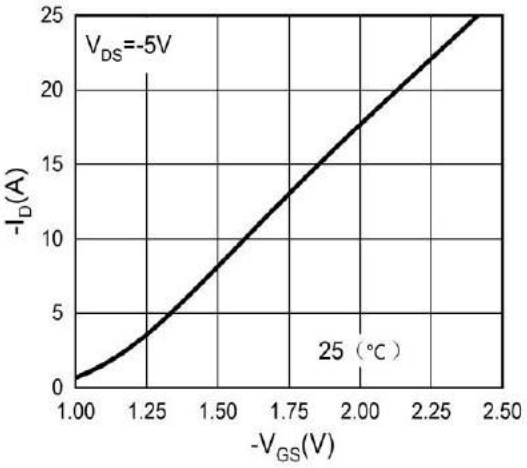


Figure 2. Transfer Characteristics

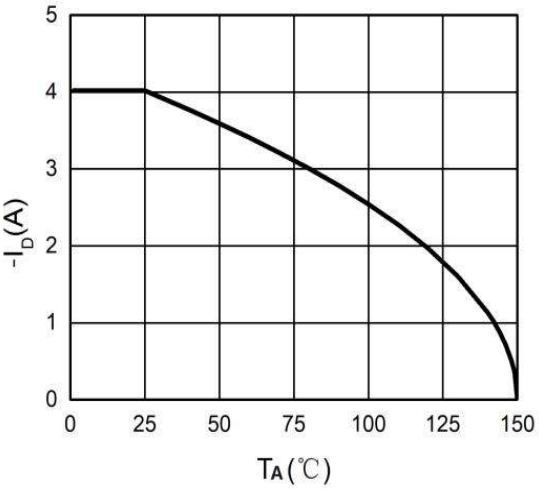


Figure 5. Drain Current

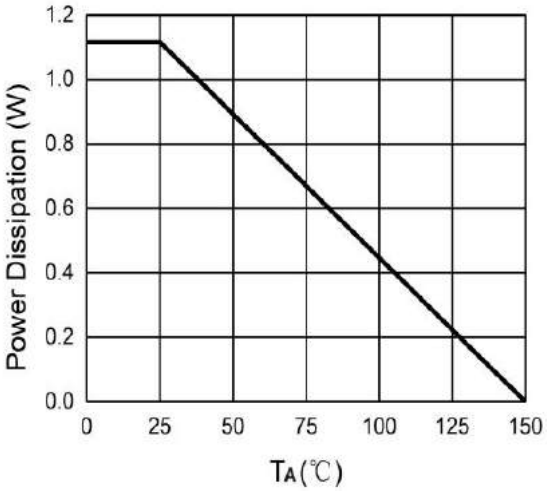


Figure 3. Power Dissipation

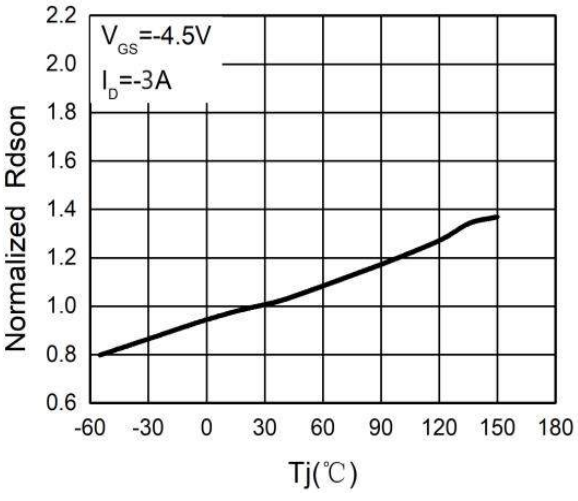


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

Typical Electrical And Thermal Characteristics (Curves)

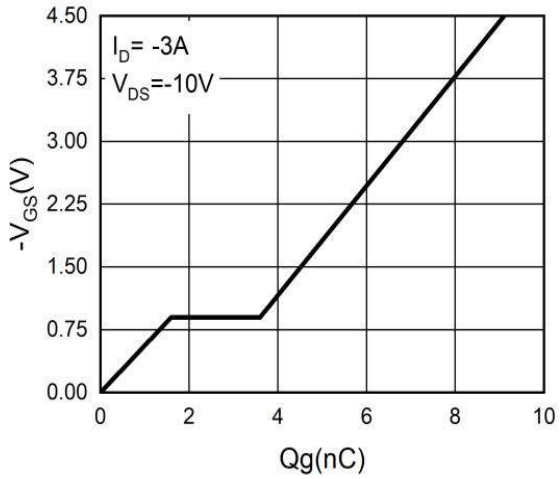


Figure 7. Gate Charge Waveforms

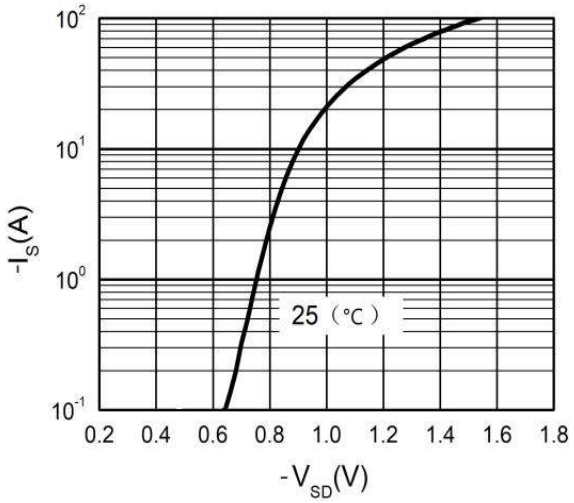


Figure 9. Body-Diode Characteristics

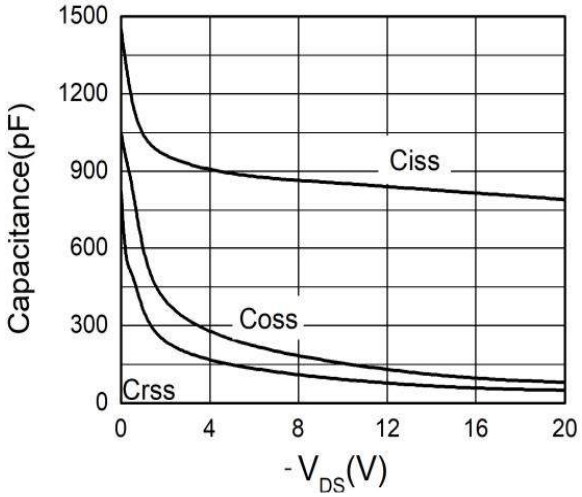


Figure 8. Capacitance

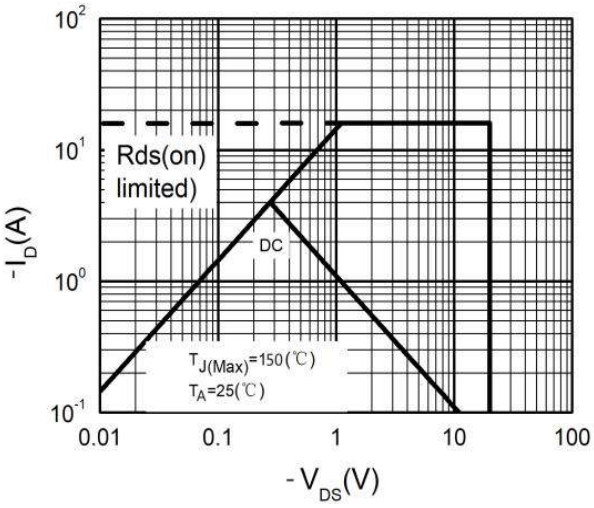
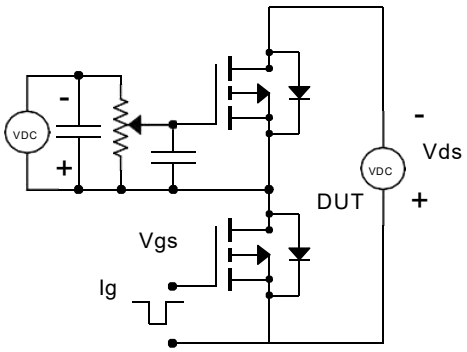
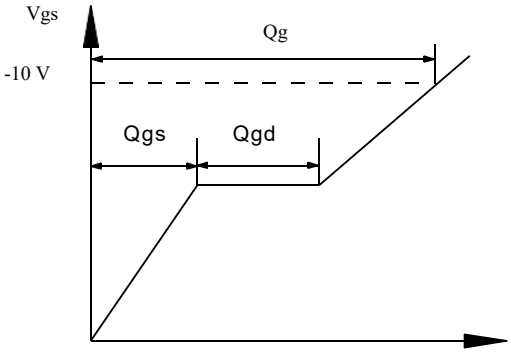


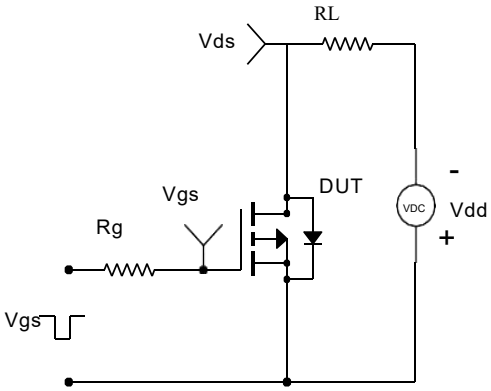
Figure 10. Maximum Safe Operating Area

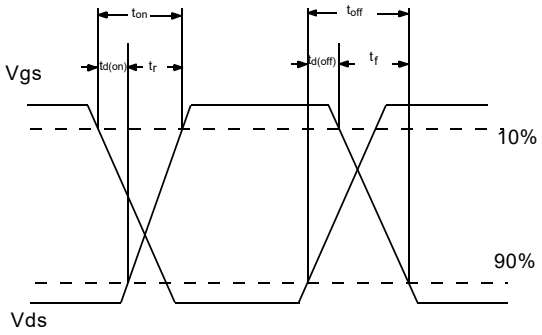
Gate Charge Test Circuit & Waveform



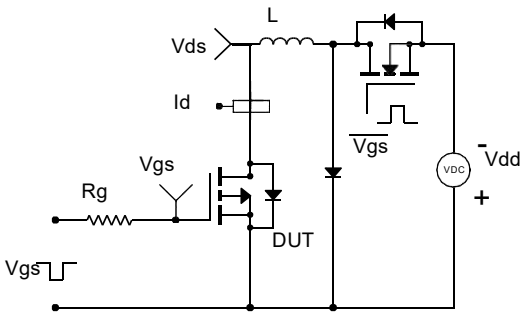


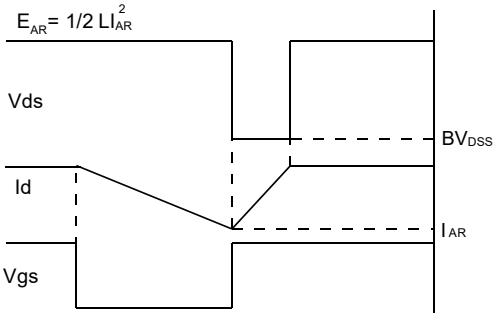
Resistive Switching Test Circuit & Waveforms



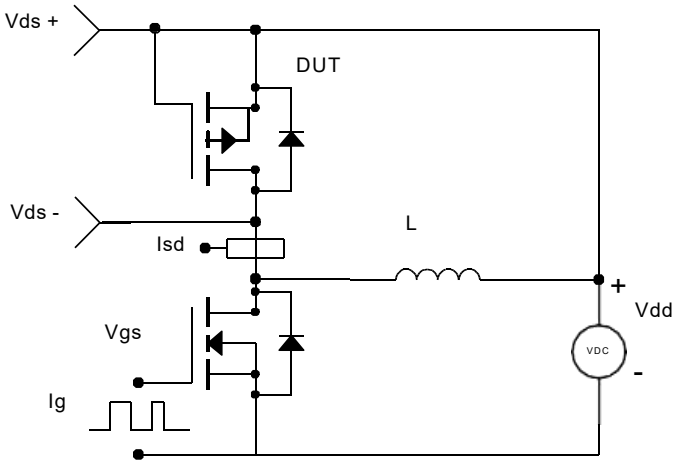


Unclamped Inductive Switching Test Circuit & Waveforms

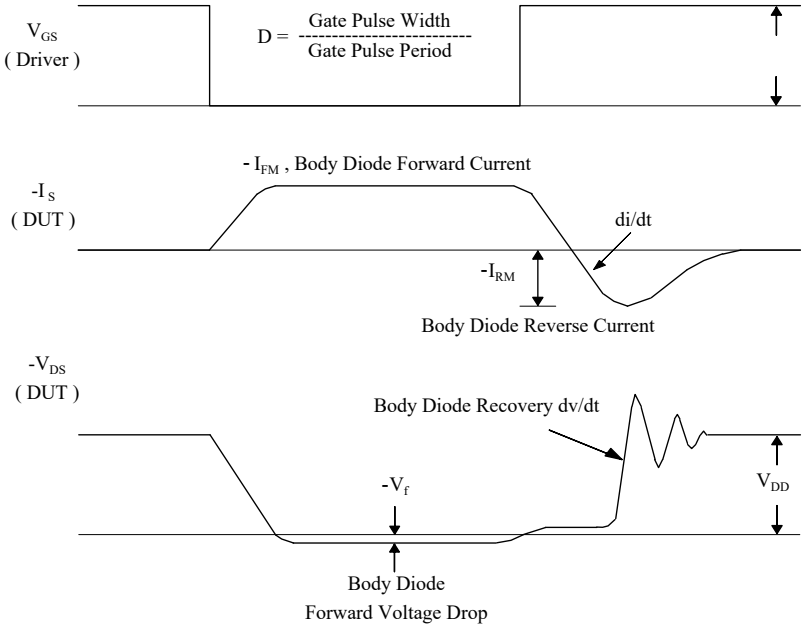




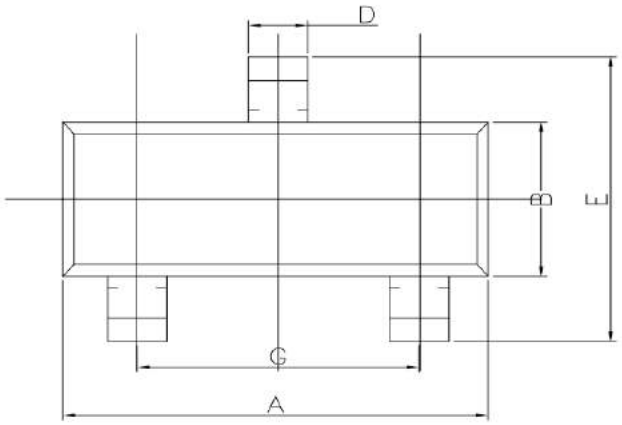
Peak Diode Recovery dv/dt Test Circuit & Waveforms

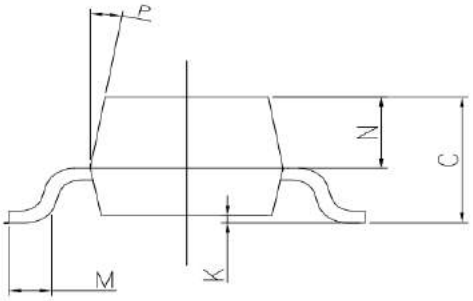


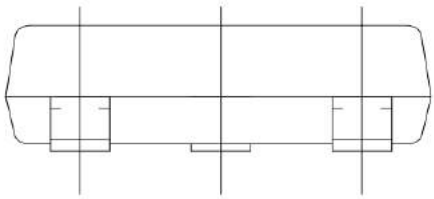
- dv/dt controlled by R_G
- I_{SD} controlled by pulse period



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

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