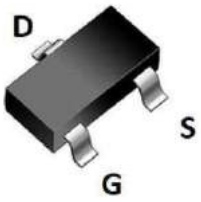
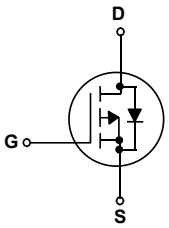
Features

- P-Channel
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation

V_{DS}	-20	V
$R_{DS(on),TYP}$@ V_{GS}=-4.5 V	29	mΩ
$R_{DS(on),TYP}$@ V_{GS}=-2.5 V	40	mΩ
I_D	-5	A

SOT-23





Part ID	Package Type	Marking	Packing
ZT2305	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	-20	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	-5	A
		T_C =100°C	-3.1	A
P_D	Maximum Power Dissipation	T_C =25°C	1.5	W
	- Derate above 25°C	T_C =25°C	0.53	W/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		83	°C/W

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	-0.4	-0.7	-0.9	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V,I_D=-4.1A	--	29	42	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-2.5V,I_D=-3A	--	40	58	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note 3,4)						
Ciss	Input Capacitance	V_{DS}=-10V,V_{GS}=0V, f=1MHz	--	820	--	pF
Coss	OutputCapacitance		--	102	--	pF
Crss	ReverseTransferCapacitance		--	80	--	pF
Qg	Total Gate Charge	V_{DS}=-10V,I_D=-4.1A, V_{GS}=-4.5V	--	7	--	nC
Qgs	Gate-SourceCharge		--	1	--	nC
Qgd	Gate-DrainCharge		--	1.4	--	nC
Switching Characteristics (Note 3,4)						
Td(on)	Turn-on Delay Time	V_{DD}=-10V, I_D=-4.1A, R_L=1Ω, R_G=1Ω, V_{GS}=-4.5V	--	14	--	ns
Tr	Turn-on Rise Time		--	60	--	ns
Td(off)	Turn-Off Delay Time		--	20	--	ns
Tf	Turn-Off Fall Time		--	10	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode) (Note 2)		--	--	-5	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	-16	A
V_{SD}	Forward on voltage	I_S=-4.1A,V_{GS}=0V	--	--	-1.2	V
Trr	Reverse Recovery Time	T_j=25℃,I_S=4.1A di/dt=100A/μs	--	16	--	ns
Qrr	Reverse Recovery Charge		--	7	--	nC

Notes:
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. I_{SD} ≤ -4A, di/dt = 100A/us, V_{DD} ≤ BV_{DSS}, Staring T_j =25°C
3. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
4. Essentially independent of operating temperature

Typical Performance Characteristics

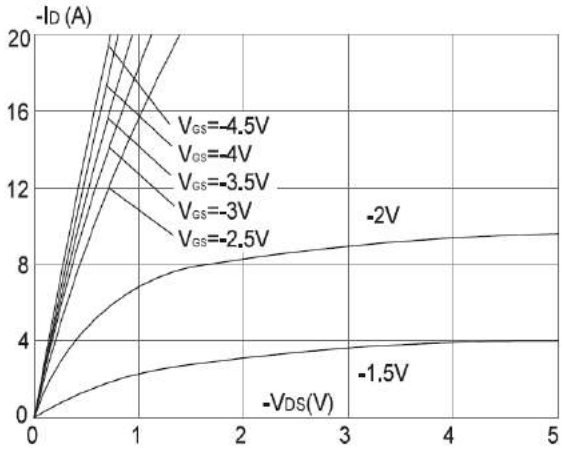


Figure1: Output Characteristics

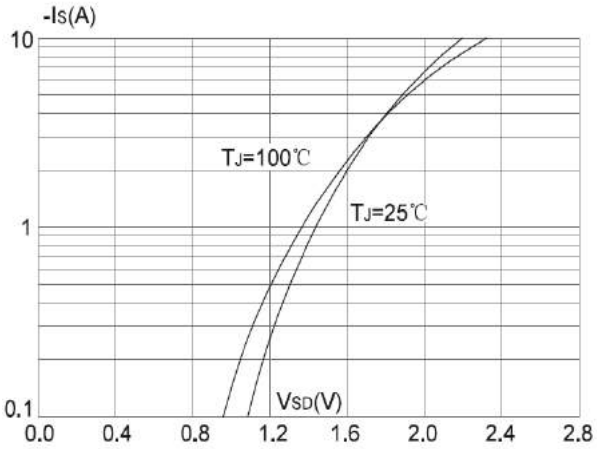


Figure 4: Body Diode Characteristics

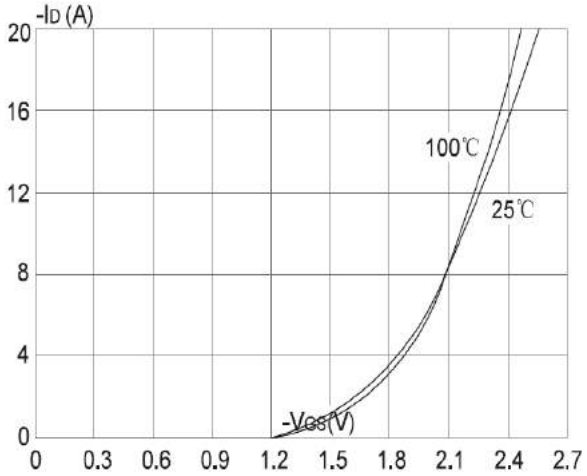


Figure 2: Typical Transfer Characteristics

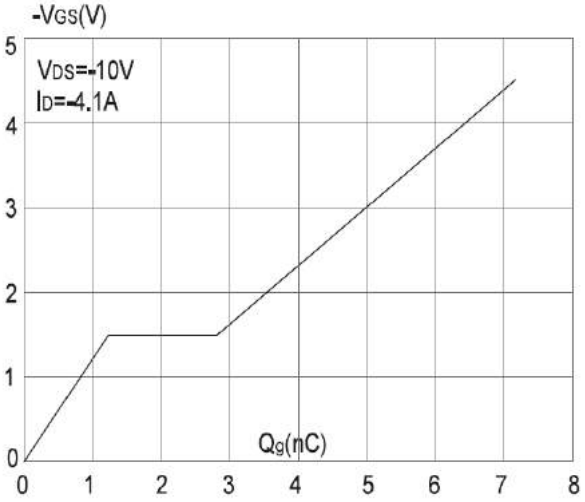


Figure 5: Gate Charge Characteristics

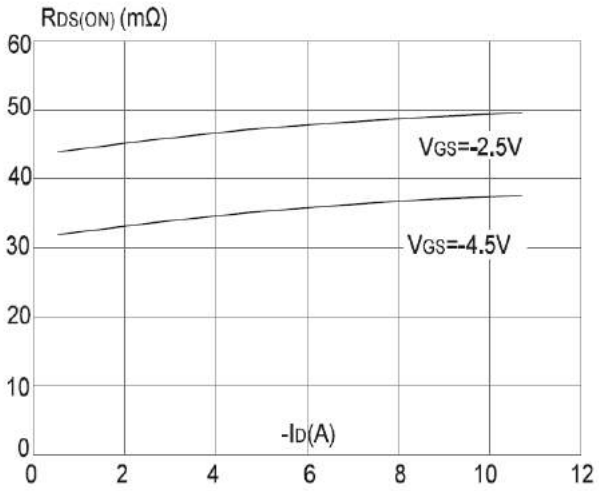


Figure 3:On-resistance vs. Drain Current

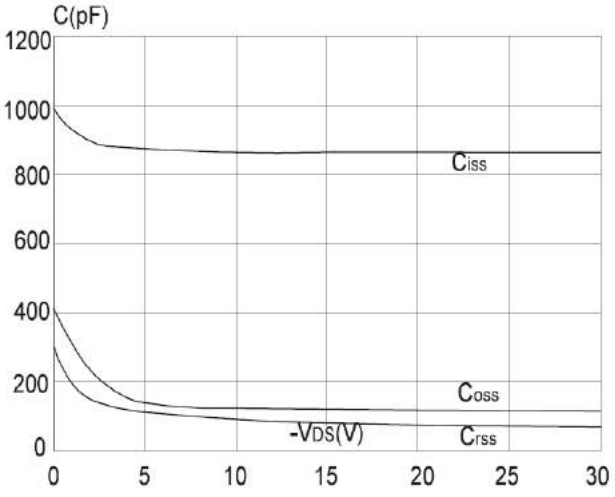


Figure 6: Capacitance Characteristics

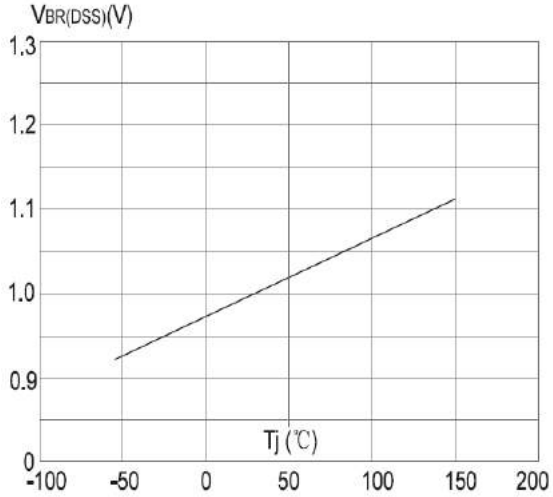


Figure 7: Normalized Breakdown Voltage vs.Junction Temperature

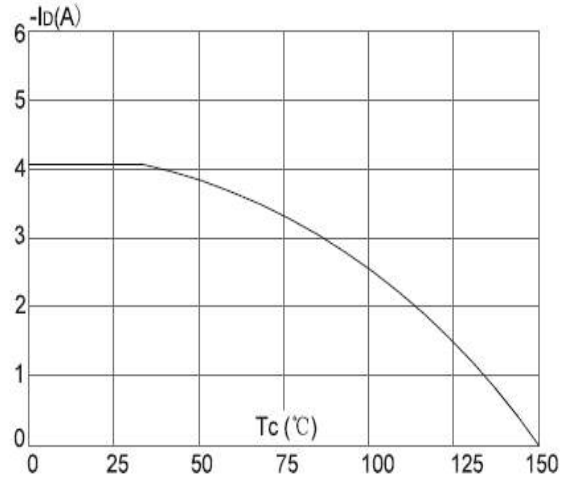


Figure.9:Maximum Drain Current vs. Case Temperature

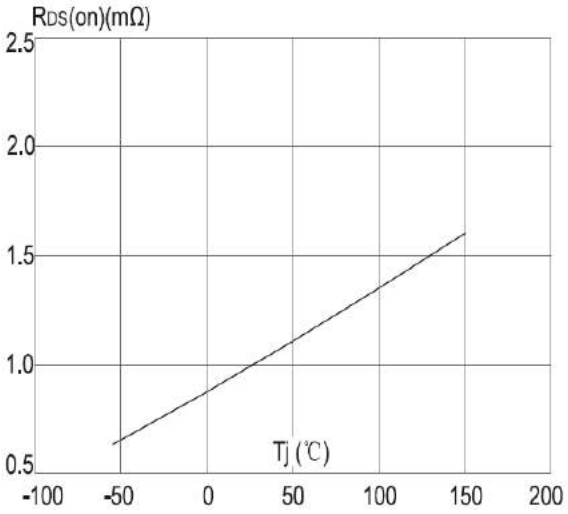


Figure 8: Normalized on Resistance vs.Junction Temperature

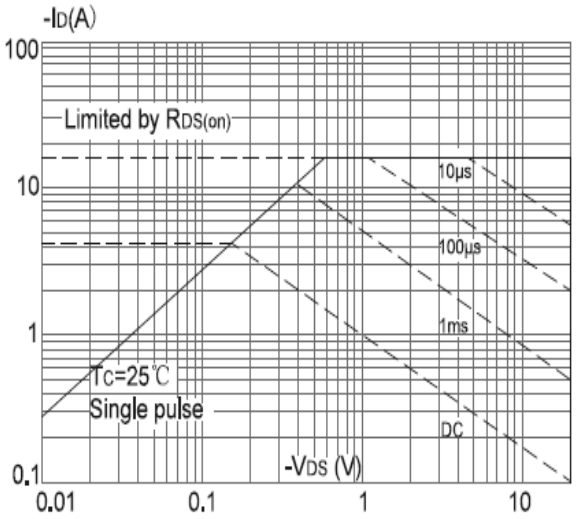


Fig.10 Safe Operating Area

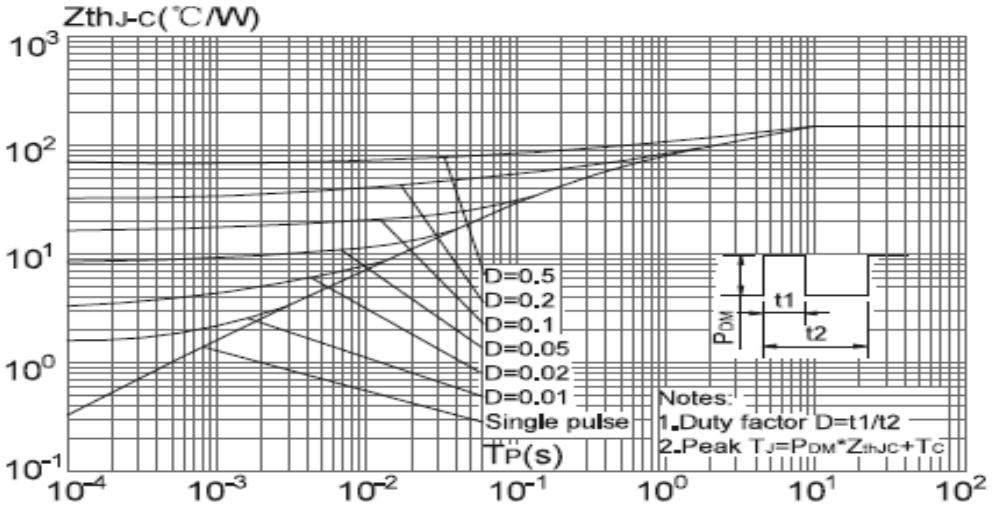
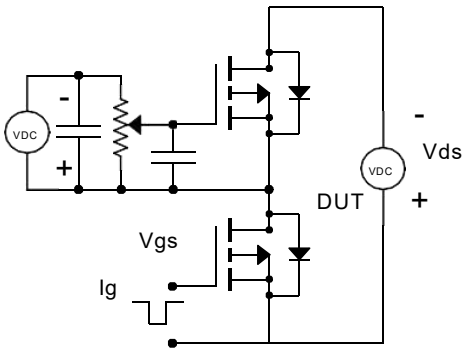
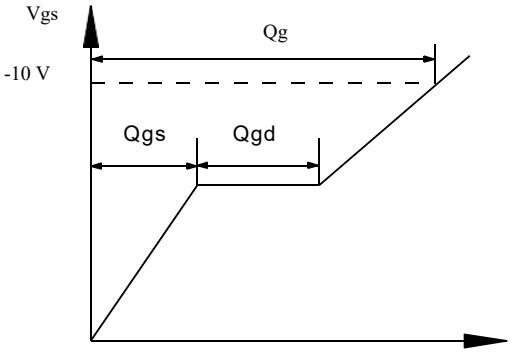


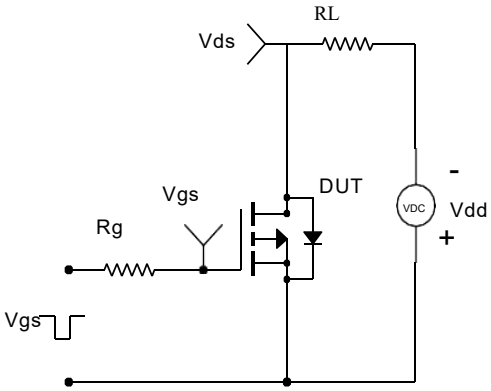
Fig. 11 Transient Thermal Response Curve

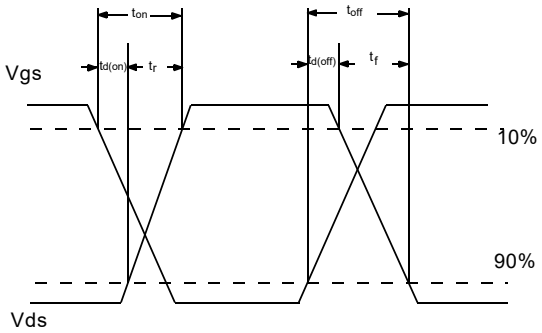
Gate Charge Test Circuit & Waveform



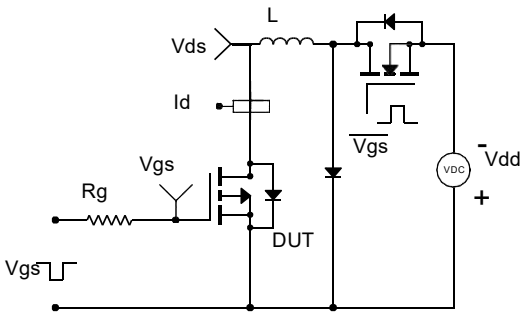


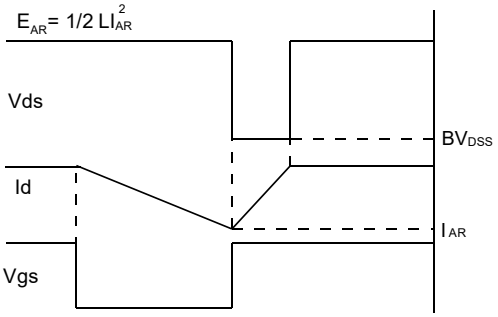
Resistive Switching Test Circuit & Waveforms



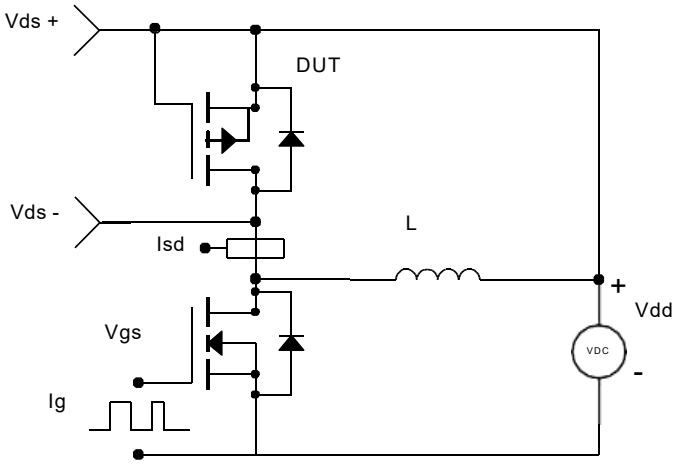


Unclamped Inductive Switching Test Circuit & Waveforms

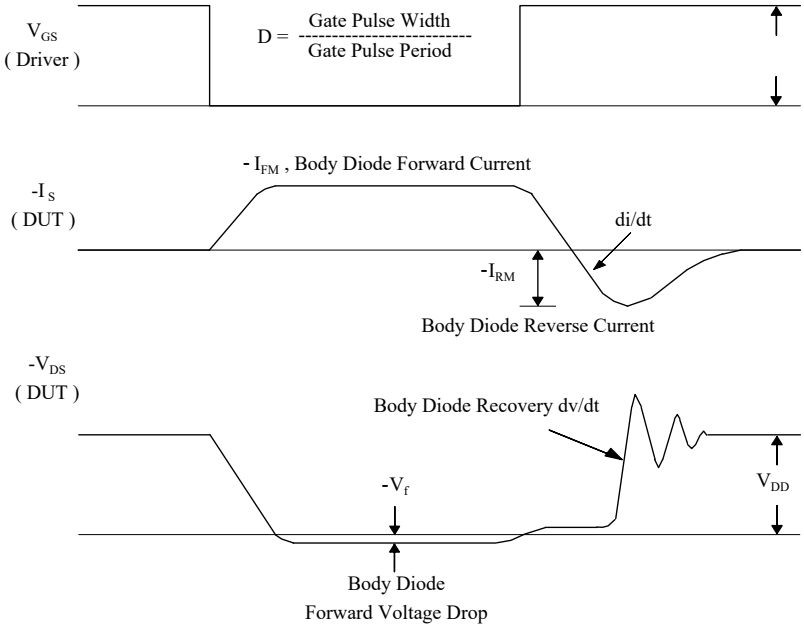




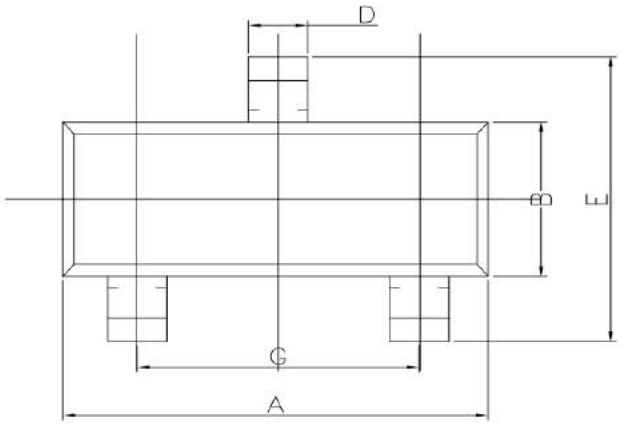
Peak Diode Recovery dv/dt Test Circuit & Waveforms

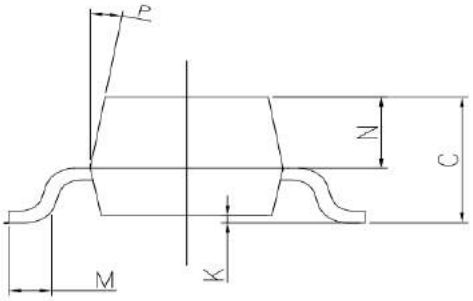


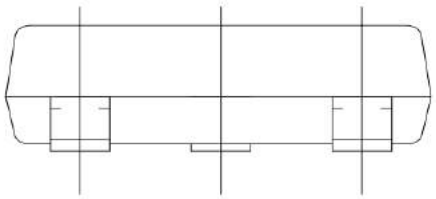
- dv/dt controlled by R_G
- I_{SD} controlled by pulse period



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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