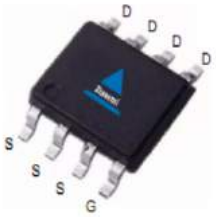
Features

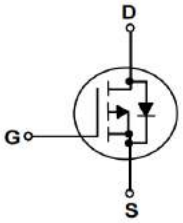
- P-Channel
- Very low on-resistance $R_{DS(ON)}$
- Reliable and Rugged
- Avalanche Rated
- 100% EAS Tested

V_{DS}	-30	V
$R_{DS(on),TYP}$@ V_{GS}=-10 V	8	mΩ
$R_{DS(on),TYP}$@ V_{GS}=-4.5 V	12	mΩ
I_D	-12	A

SOP-8



RoHS HF



Part ID	Package Type	Marking	Packing
ZT090P03S	SOP-8	ZT090P03S	4000pcs/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		±25	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-30	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	-54	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	-12	A
		T_C =100°C	-8	A
P_D	Maximum Power Dissipation	T_C =25°C	3.6	W
		T_C =100°C	1.4	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		35.7	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 2)		225	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	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V,V_{GS}=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±25V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-1.0	-1.5	-2.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V,I_D=-12A	--	8	10.5	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V,I_D=-7A	--	12	16	mΩ
g_{FS}	Forward Transconductance	V_{DS}=-5V ,I_D=-20A	--	60	--	S
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1MHz	--	1780	--	pF
Coss	OutputCapacitance		--	240	--	pF
Crss	ReverseTransferCapacitance		--	205	--	pF
Rg	Gate Resistance	f=1MHz	--	2.5	--	Ω
Qg	Total Gate Charge	V_{DS}=-15V,I_D=-15A, V_{GS}=-10V	--	46	--	nC
Qgs	Gate-SourceCharge		--	1.0	--	nC
Qgd	Gate-DrainCharge		--	1.4	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DS}=-15V, R_L=1Ω, R_G=3Ω, V_{GS}=-10V	--	8	--	ns
Tr	Turn-on Rise Time		--	27	--	ns
Td(off)	Turn-Off Delay Time		--	68	--	ns
Tf	Turn-Off Fall Time		--	39	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode)		--	--	-12	A
V_{SD}	Forward on voltage (Note 3)	I_S=-20A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	T_j=25℃,I_{SD}=-4A, V_{GS}=0V di/dt=100A/μs	--	13.5	--	ns
Qrr	Reverse Recovery Charge		--	3.7	--	nC

Notes :
1.Repetitive Rating: Pulse width limited by maximum junction temperature.
2.E_{AS} condition: T_J=25℃,V_{DD}=-30V,V_G=-10V, Rg=25Ω, L=0.5mH.
3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

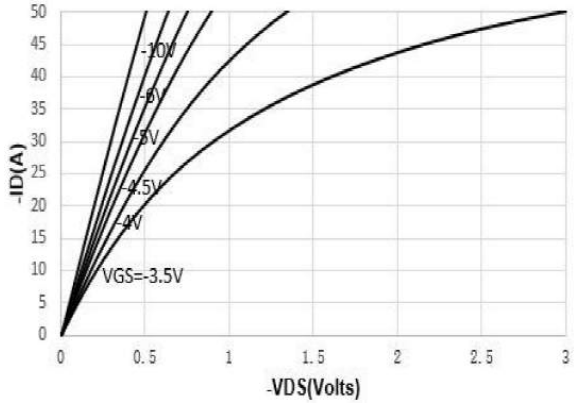


Figure 1. On-Regin Characteristics

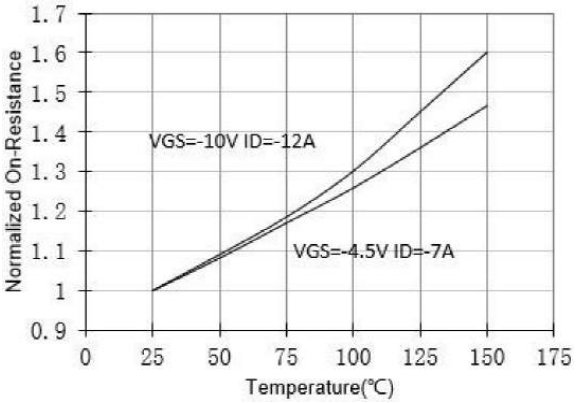


Figure 4. On-Resistance vs. Junction Temperature

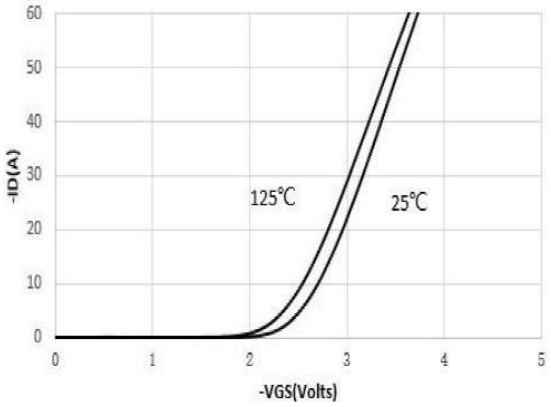


Figure 2. Transfer Characteristics

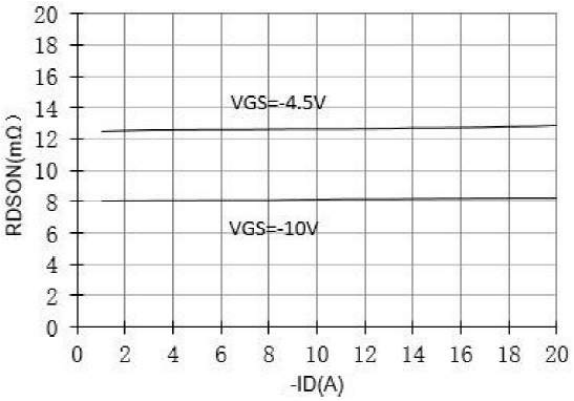


Figure 5. On-Resistance vs. Drain Current and Gate Voltage

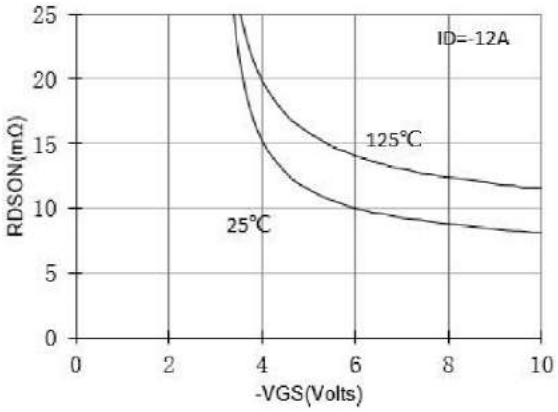


Figure 3. On-Resistance vs. Gate-Source Voltage

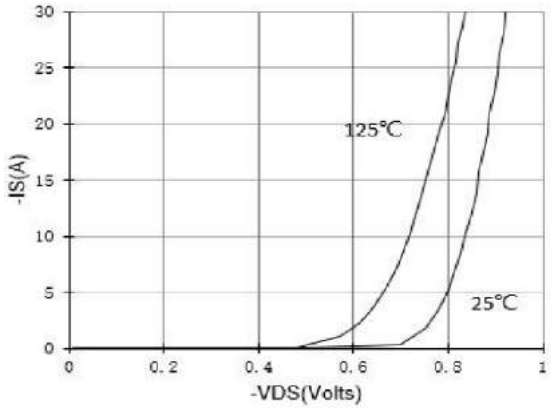


Figure 6. Body-Diode Characteristics

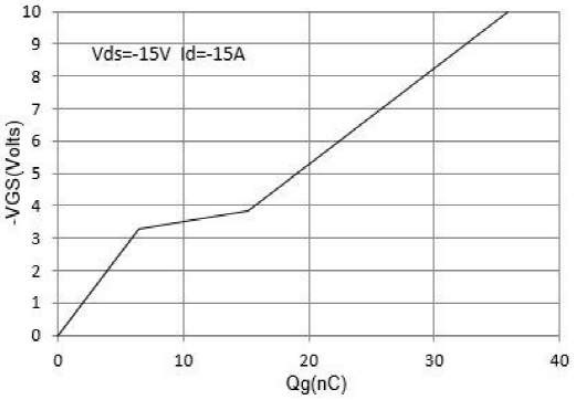


Figure 7 Gate-Charge Characteristics

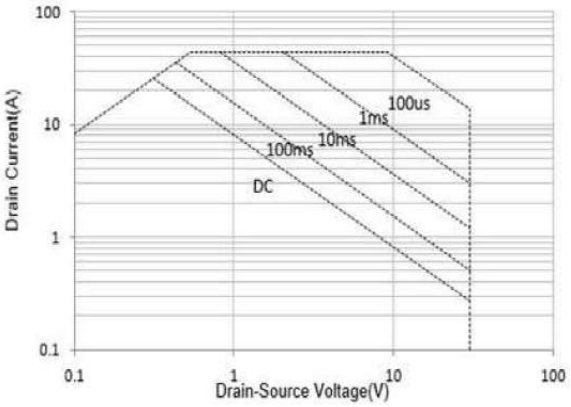


Figure 9. Maximum Forward Biased Safe Operating Area

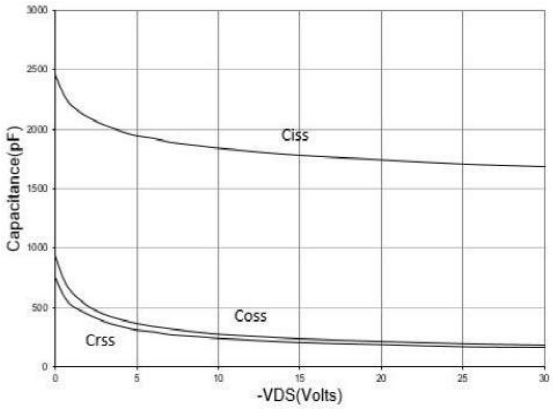


Figure 8 Capacitance Characteristics

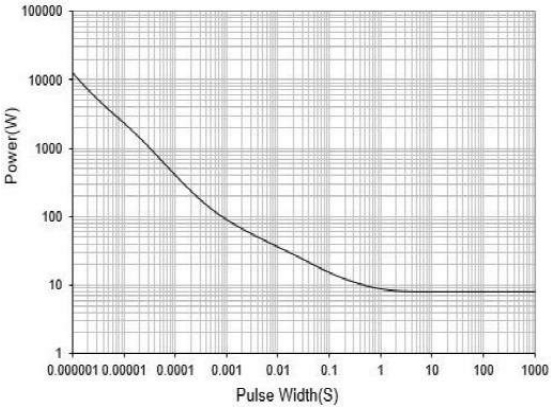


Figure 10. Single Pulse Power Rating Junction-to-Ambient

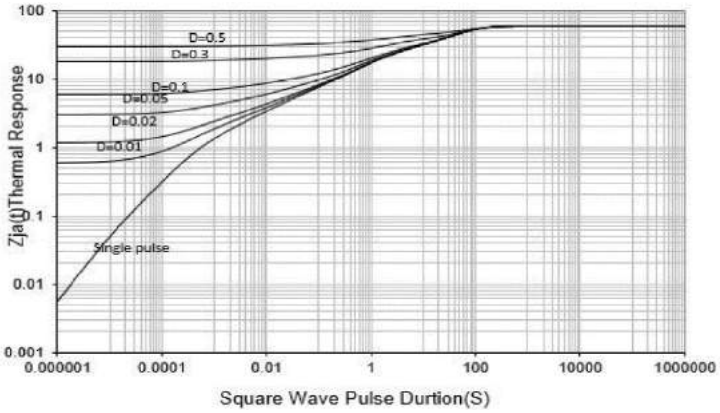
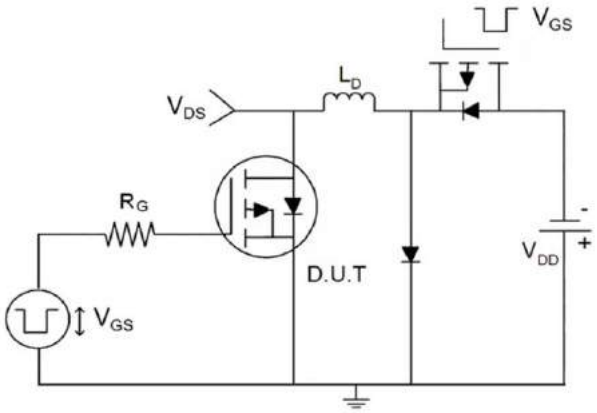
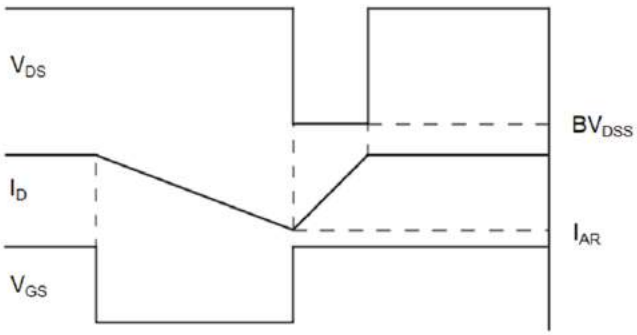


Figure 11. Normalized Maximum Transient Thermal Impedance

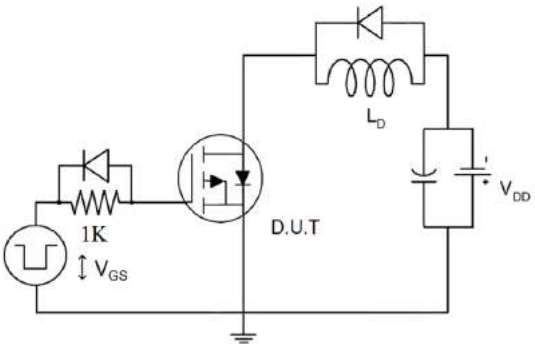
Test Circuit

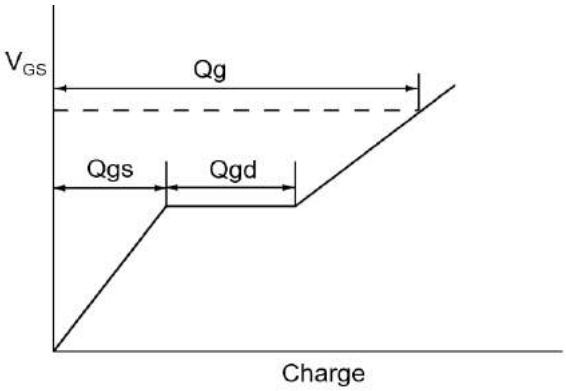
1) E_{AS} Test Circuits



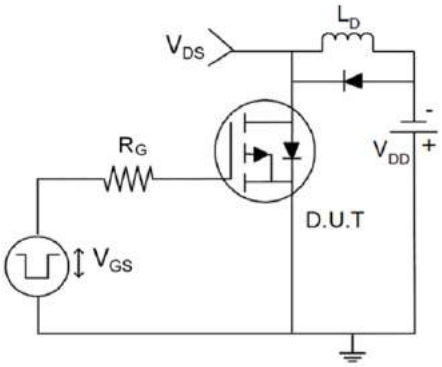


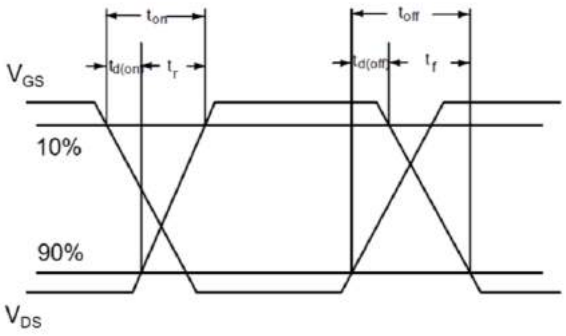
2) Gate Charge Test Circuit



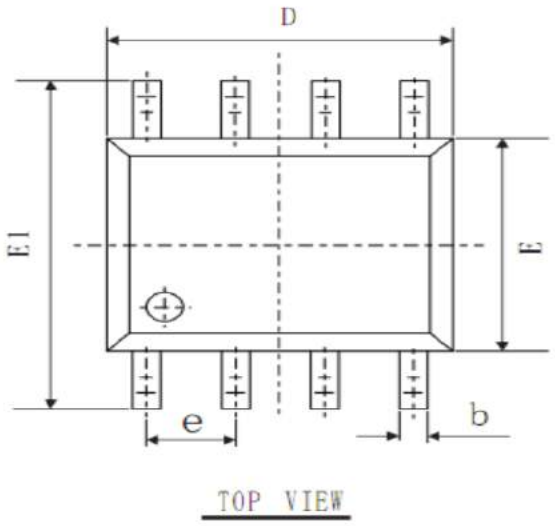


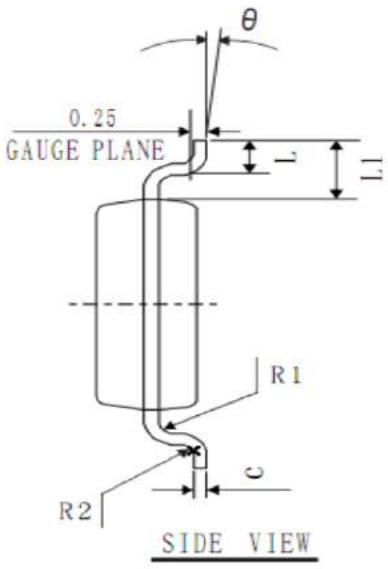
3) Switch Time Test Circuit

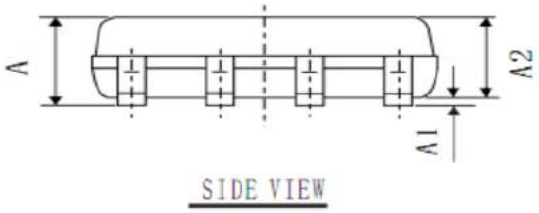




SOP-8 Package Information







COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		

Customer Service

Sales and Service:

zj@ztasemi.com