



TS520P10E

Single P-Channel Power MOSFET

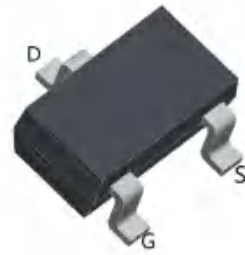
V _{DSS} (V)	R _{DS} (ON)	I _D (A)
-100	520mΩ(Typ)@V _{GS} =-10V	-1
	560mΩ(Typ)@V _{GS} =-4.5V	

FEATURE:

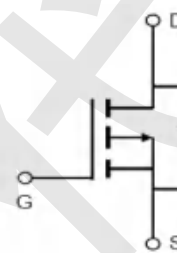
- The TS520P10E is the high cell density trench P-channel MOSFETs, which provides excellent R_{DS(on)} and efficiency for most of the small power switching and load switch applications.

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

Pin Description



SOT-23



Ordering and Marking Information

Product ID	Marking	Package	Packaging	Quantity
TS520P10E		SOT-23	Tape&Reel	3000

Absolute Maximum Ratings

Symbol	Parameter		Rating	Units
V _{DSS}	Drain-Source Voltage		-100	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current(V _{GS} = -4.5V)	T _A =25°C	-1	A
		T _A =70°C	-0.7	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _{DM}	Pulsed Drain Current		-1.8	A
P _D	Maximum Power Dissipation	T _A =25°C	1	W
		T _A =70°C	---	
E _{AS}	Avalanche Energy, Single Pulsed		---	mJ
R _{θJC}	Thermal Resistance-Junction to Case		80	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		125	°C/W



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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250uA	-100	---	---	V
VGS(th)	Gate threshold voltage	VDS=VGS,ID=250uA	-1.0	-1.5	-2.5	V
RDS(on)	Drain-Source On-state Resistance	VGS=-10V , ID=-0.8A	---	520	650	mΩ
		VGS=-4.5V , ID=-0.4A	---	560	700	mΩ
IGSS	Gate-source leakage current	VGS=±20V , VDS=0V	---	---	±100	nA
IDSS	Zero gate voltage drain current	VDS=-80V,VGS=0V,TJ=25℃	---	---	10	μA
		TJ=55℃	---	---	100	
Dynamic Characteristic						
Ciss	Input Capacitance	VGS=0V, VDS=-15V, Frequency=1.0MHz	---	553	---	pF
Coss	Output Capacitance		---	29	---	
Crss	Reverse Transfer Capacitance		---	20	---	
QG	Gate Total Charge	VDS=-15V, VGS=-4.5V, IDS=-0.5A	---	4.5	---	nC
Qgs	Gate-Source charge		---	1.14	---	
Qgd	Gate-Drain charge		---	1.5	---	
td(on)	Turn-on delay time	VDD=-50V , VGS=-10V , RG=3.3Ω, ID=-0.5A	---	13.6	---	ns
tr	Turn-on Rise Time		---	6.8	---	
td(off)	Turn-off Delay Time		---	34	---	
tf	Turn-off Fall Time		---	3	---	
RG	Gate Resistance	VGS=0V,VDS=0V,F=1MHz	---	16	---	Ω
Diode Characteristics						
VSD	Diode Forward Voltage	VGS=0V , IS=1A , TJ=25℃	---	---	-1.2	V
Is	Continuous Source Current		--	--	-1	A
trr	Reverse Recovery Time	ISD=4.1A, dISD/dt=-100A/μs	---	--	---	ns
Qrr	Reverse Recovery Charge		---	--	---	nC

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

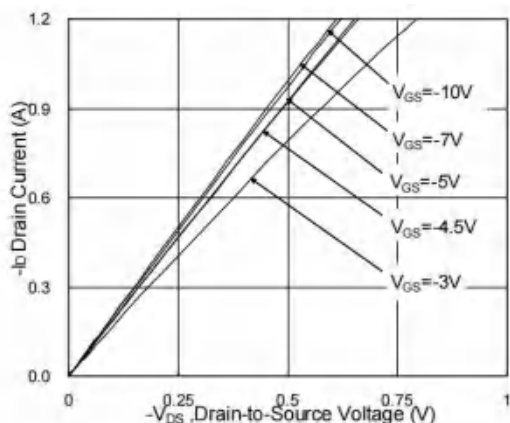


Fig.1 Typical Output Characteristics

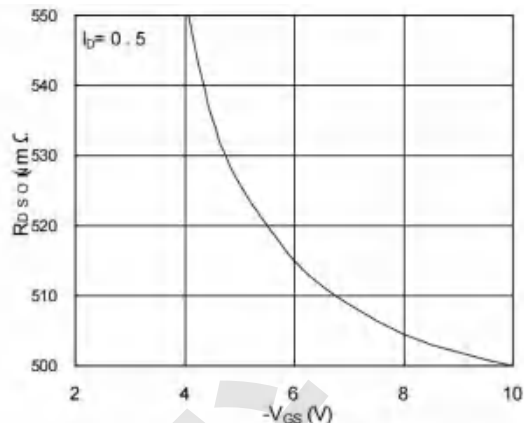


Fig.2 On-Resistance vs. Gate-Source

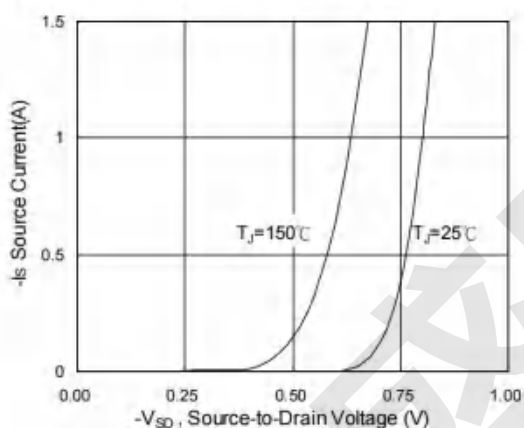


Fig.3 Forward Characteristics Of Reverse

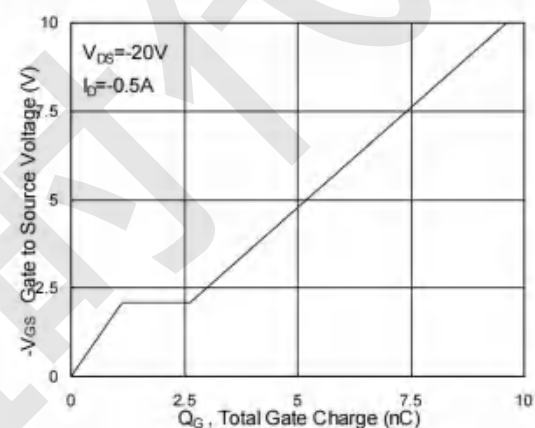


Fig.4 Gate-Charge Characteristics

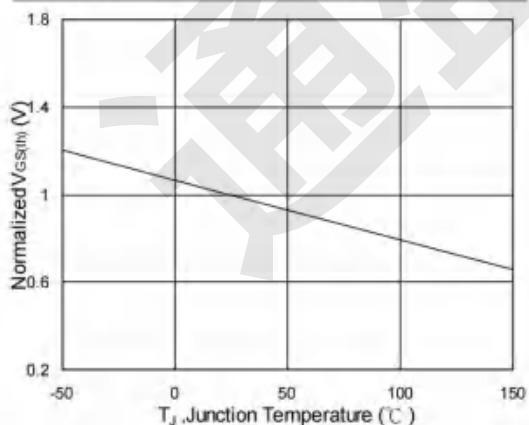


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

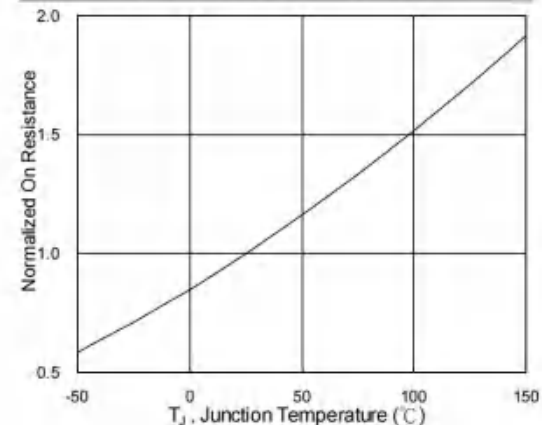


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

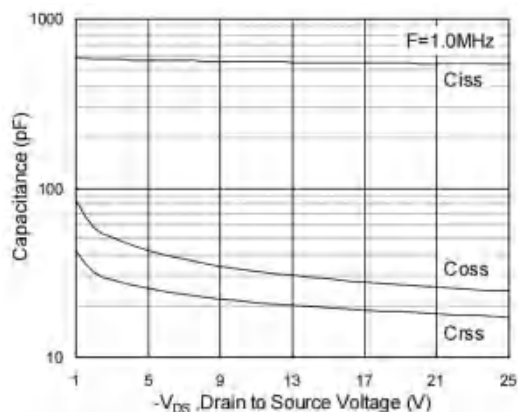


Fig.7 Capacitance

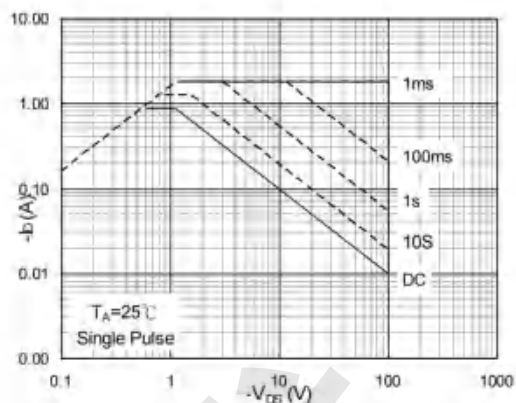


Fig.8 Safe Operating Area

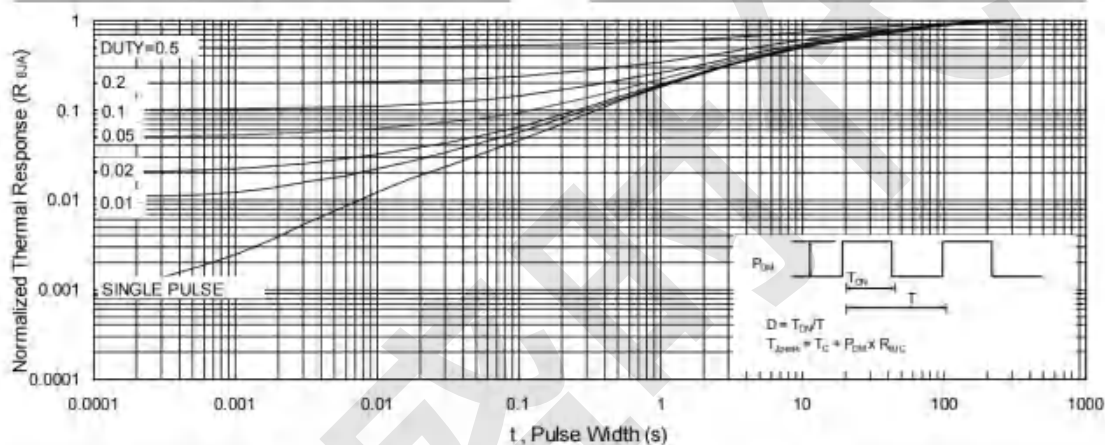


Fig.9 Normalized Maximum Transient Thermal Impedance

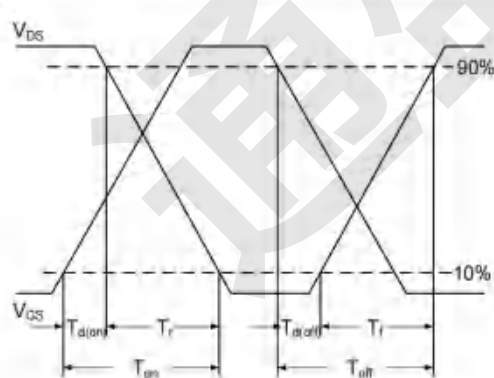


Fig.10 Switching Time Waveform

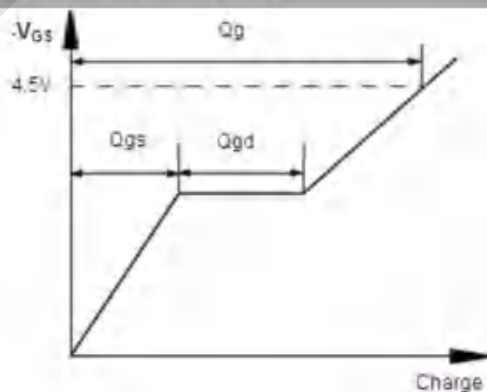
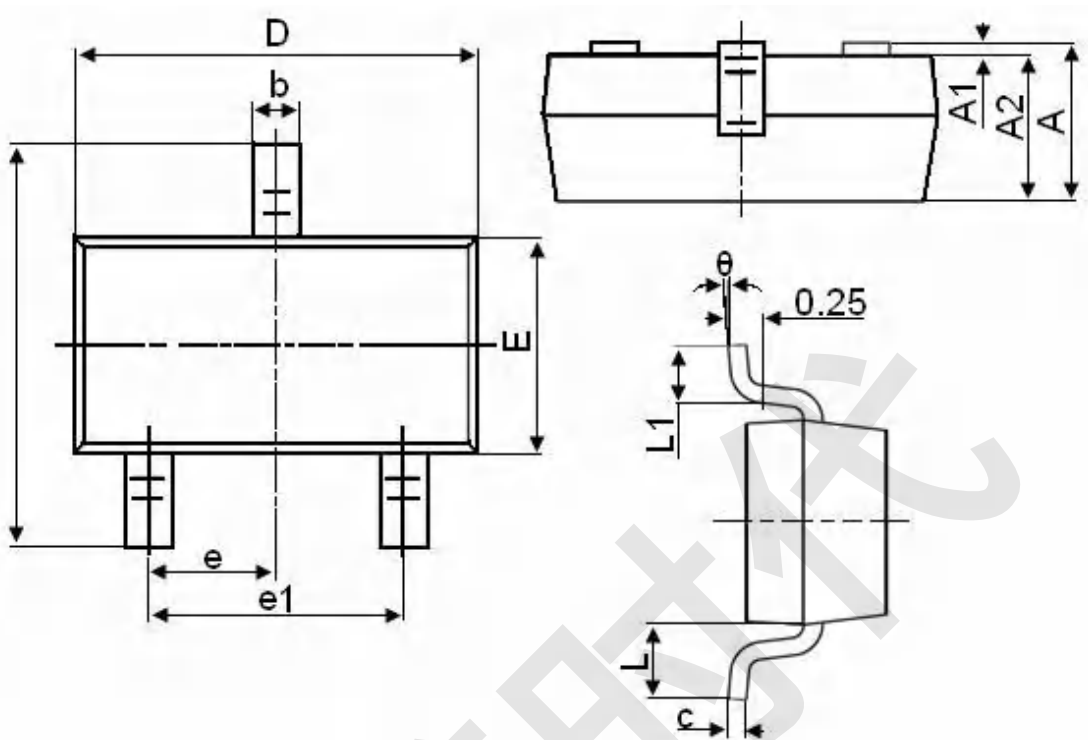


Fig.11 Gate Charge Waveform



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°



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Edition	Date	Change
Rve1.0	2022/11	Initial release

通盛时代