

TS2302CE

Single N-Channel Power MOSFET

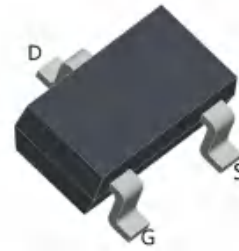
V _{DSS} (V)	R _{DS (ON)}	I _{D(A)}
20	50mΩ(Typ)@V _{GS} =4.5V	2.3
	70mΩ(Typ)@V _{GS} =2.5V	

FEATURE:

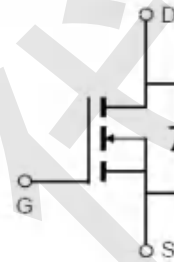
- The TS2302CE is the high cell density trenched N-ch MOSFETS, which provides excellent R_{DS(ON)} and efficiency for most of the small power switching and load switch applications.

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

Pin Description



SOT-23



Ordering and Marking Information

Product ID	Marking	Package	Packaging	Quantity
TS2302CE		SOT-23	Tape&Reel	3000

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate-Source Voltage	±12	V
I _D	Continuous Drain Current(V _{GS} = -4.5V)	T _c =25°C	2.3
		T _c =70°C	1.2
T _J	Maximum Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
I _{DM}	Pulsed Drain Current	10	A
P _D	Maximum Power Dissipation	T _c =25°C	0.85
		T _c =70°C	---
E _{AS}	Avalanche Energy, Single Pulsed	---	mJ
R _{θJC}	Thermal Resistance-Junction to Case	---	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	162	°C/W



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Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250uA	20	---	---	V
VGS(th)	Gate threshold voltage	VDS=VGS, ID=250uA	0.4	0.7	1.0	V
RDS(on)	Drain-Source On-state Resistance	VGS=4.5V, ID=3A	---	50	65	mΩ
		VGS=2.5V, ID=2A	---	70	95	mΩ
IGSS	Gate-source leakage current	VGS=±12V, VDS=0V	---	---	±100	nA
IDSS	Zero gate voltage drain current	VDS=20V, VGS=0V, T _J =25°C	---	---	1	μA
		T _J =55°C	---	---	---	
Dynamic Characteristic						
Ciss	Input Capacitance	VGS=0V, VDS=10V, Frequency=1.0MHz	---	124	---	pF
Coss	Output Capacitance		---	28	---	
Crss	Reverse Transfer Capacitance		---	25	---	
QG	Gate Total Charge	VDS=10V, VGS=4.5V, IDS=3A	---	2.7	---	nC
Qgs	Gate-Source charge		---	0.4	---	
Qgd	Gate-Drain charge		---	0.5	---	
td(on)	Turn-on delay time	VDD=10V, VGS=4.5V, RG=3Ω, ID=3A	---	4	---	ns
tr	Turn-on Rise Time		---	30	---	
td(off)	Turn-off Delay Time		---	10	---	
tf	Turn-off Fall Time		---	3.5	---	
RG	Gate Resistance	VGS=0V, VDS=0V, F=1MHz	---	---	---	Ω
Diode Characteristics						
VSD	Diode Forward Voltage	VGS=0V, IS=1A, T _J =25°C	---	---	1.2	V
Is	Maximum Continuous Drain to Source Diode Forward Current		---	---	2.3	A
ISM	Maximum Pulsed Drain to Source Diode Forwa		---	---	10	A
trr	Reverse Recovery Time	ISD=4.1A, dISD/dt=-100A/μs	---	--	---	ns
Qrr	Reverse Recovery Charge		---	--	---	nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1: Output Characteristics

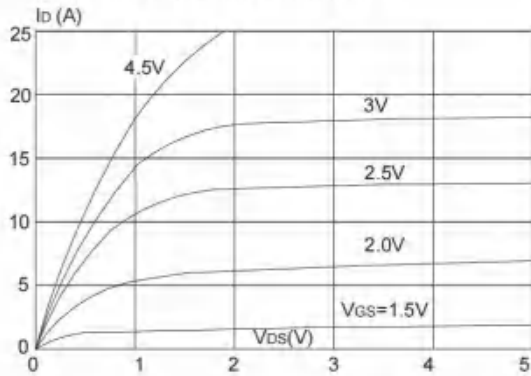


Figure 2: Typical Transfer Characteristics

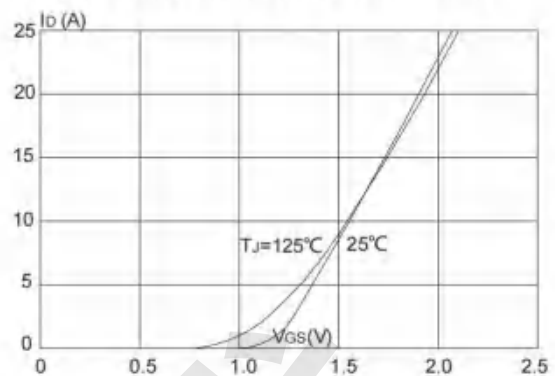


Figure 3: On-resistance vs. Drain Current

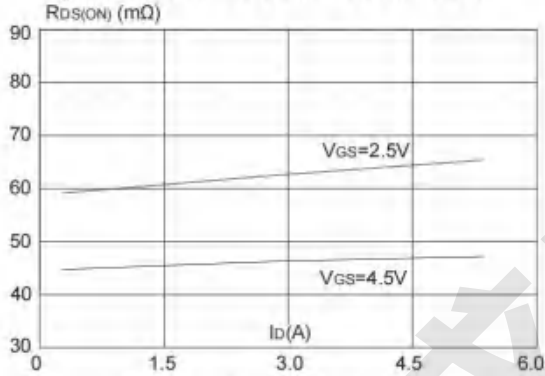


Figure 4: Body Diode Characteristics

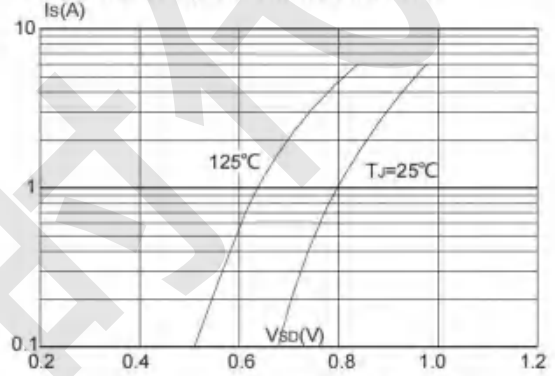


Figure 5: Gate Charge Characteristics

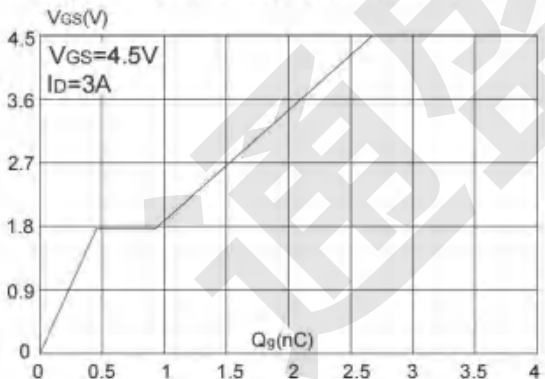


Figure 6: Capacitance Characteristics

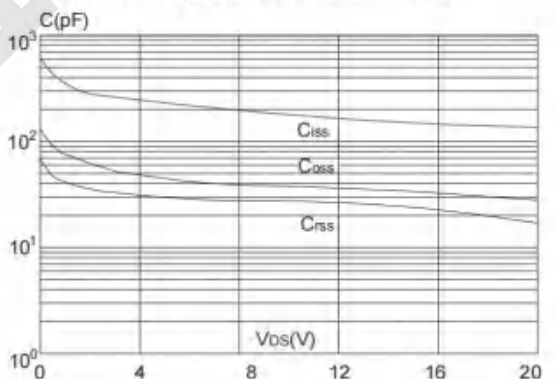


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

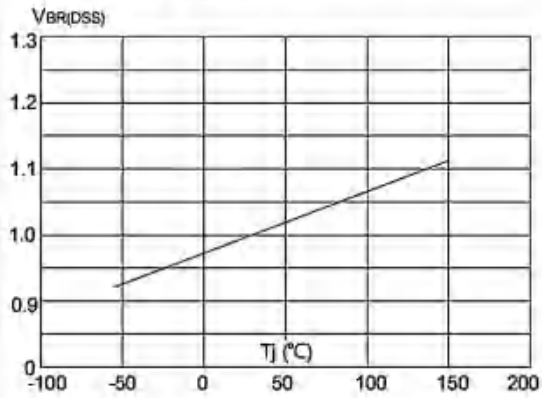


Figure 8: Normalized on Resistance vs. Junction Temperature

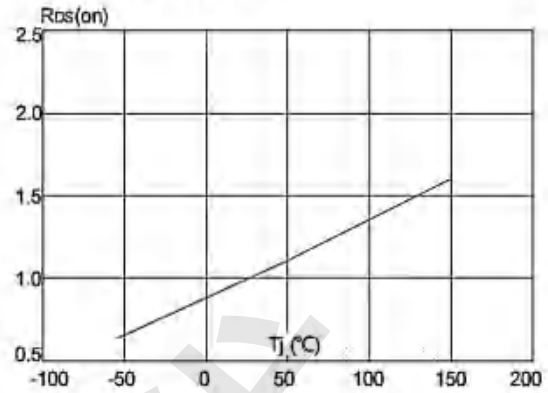


Figure 9: Maximum Safe Operating Area

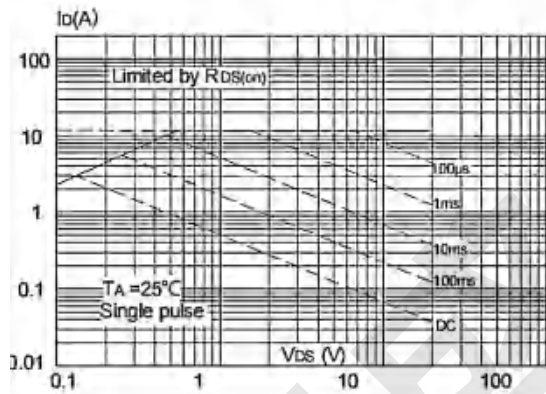


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

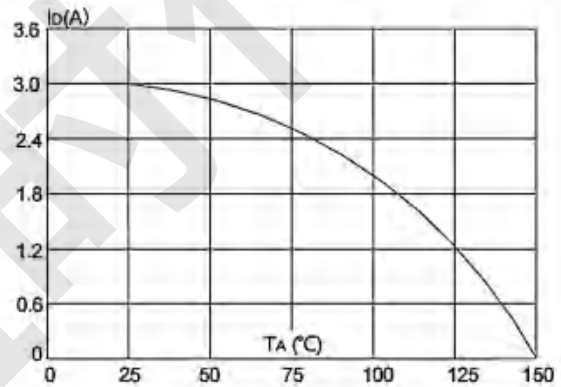
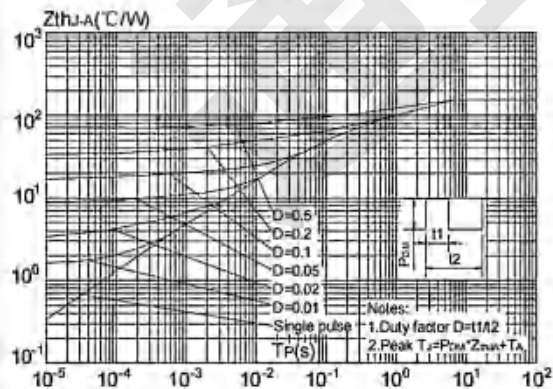
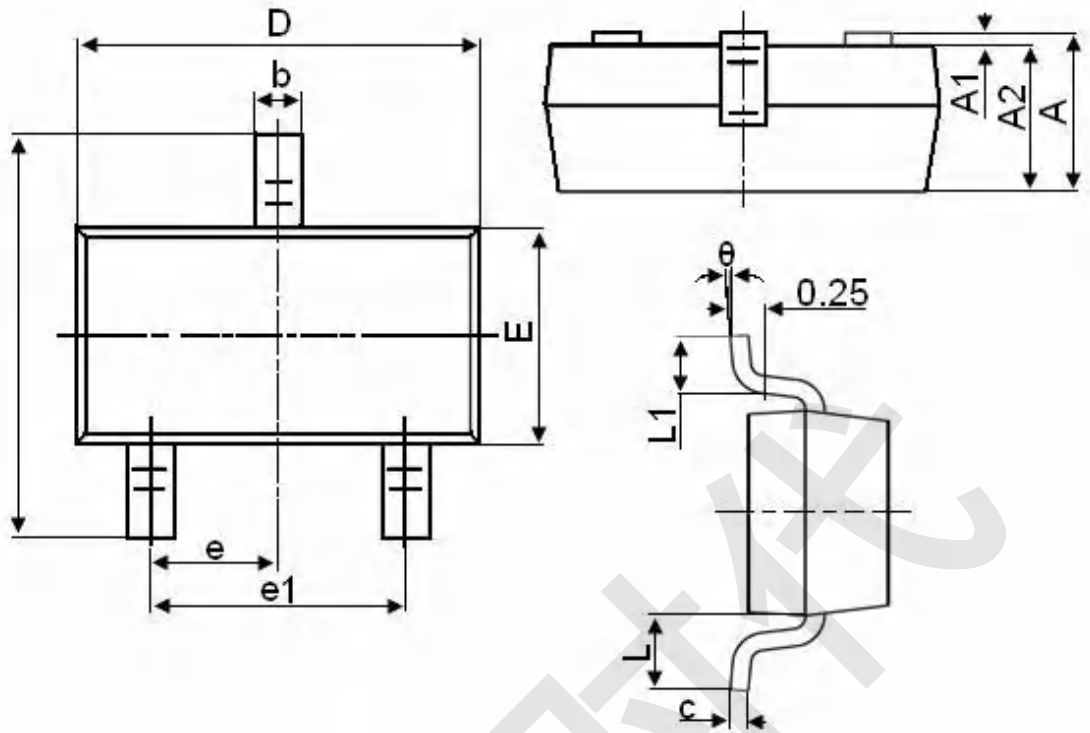


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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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