

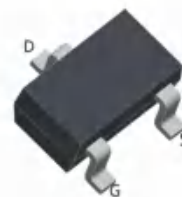


TS2300E

Single N-Channel Power MOSFET

V _{DSS} (V)	R _{DS} (ON)	I _D (A)
20	21mΩ(Typ)@V _{GS} =4.5V	5.2
	29mΩ(Typ)@V _{GS} =2.5V	

Pin Description



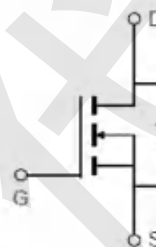
SOT-23

FEATURE:

- The TS2300E is the high cell density trench N-ch MOSFETS, which provides excellent R_{DS(ON)} and efficiency for most of the small power switching and load switch applications.

APPLICATIONS:

- Load Switch for Portable Devices
- Power Management



Ordering and Marking Information

Product ID	Marking	Package	Packaging	Quantity
TS2300E	2300	SOT23	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 _A =25°C	5.2
		T _A =70°C	3
T _J	Maximum Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
I _{DM}	Pulsed Drain Current	16	A
P _D	Maximum Power Dissipation	T _A =25°C	1
		T _A =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	170	°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	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$V_{GS(th)}$	Gate threshold voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.7	1.1	V
RDS(on)	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_D=3.5A$	---	21	27	m Ω
		$V_{GS}=2.5V, I_D=2A$	---	29	44	m Ω
IGSS	Gate-source leakage current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	A
IDSS	Zero gate voltage drain current	$V_{DS}=20V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
		$T_J=55^{\circ}\text{C}$	---	---	---	
Dynamic Characteristic						
Ciss	Input Capacitance	$V_{GS}=0V, V_{DS}=10V,$ Frequency=1.0MHz	---	358	---	pF
Coss	Output Capacitance		---	69.3	---	
Crss	Reverse Transfer Capacitance		---	58.5	---	
QG	Gate Total Charge	$V_{DS}=10V, V_{GS}=5V,$ $I_{DS}=-3A$	---	5.6	---	nC
Qgs	Gate-Source charge		---	0.8	---	
Qgd	Gate-Drain charge		---	1	---	
td(on)	Turn-on delay time	$V_{DD}=10V, V_{GS}=5V,$ $R_G=5\Omega, I_D=3A$	---	5	---	ns
tr	Turn-on Rise Time		---	30	---	
td(off)	Turn-off Delay Time		---	48	---	
tf	Turn-off Fall Time		---	36	---	
RG	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	---	---	Ω
Diode Characteristics						
VSD	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1.2	V
trr	Reverse Recovery Time	$I_{SD}=4.1A,$ $dI_{SD}/dt=-100A/\mu s$	---	---	---	ns
Qrr	Reverse Recovery Charge		---	---	---	nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

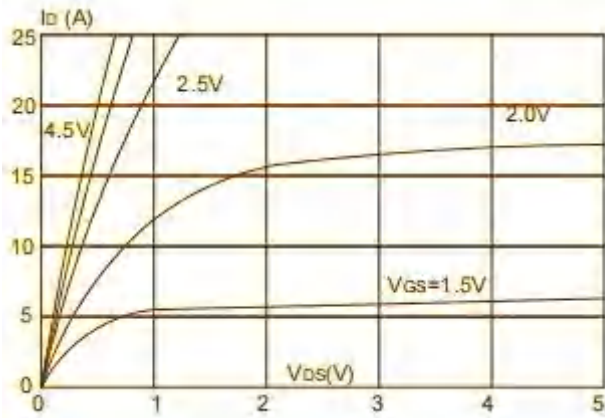


Figure 1: Output Characteristics

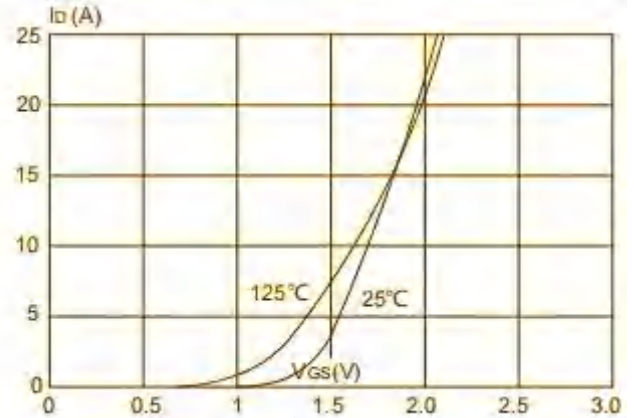


Figure 2: Typical Transfer Characteristics

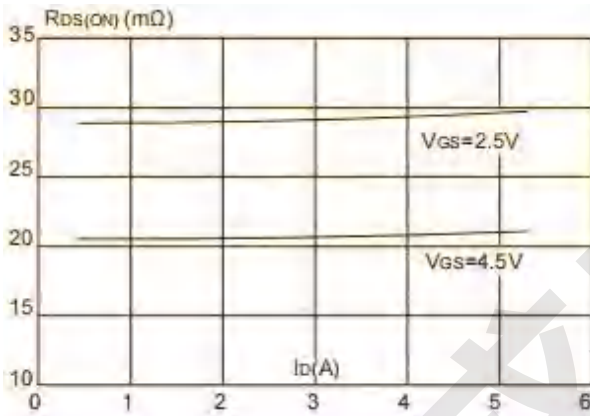


Figure 3: On-resistance vs. Drain Current

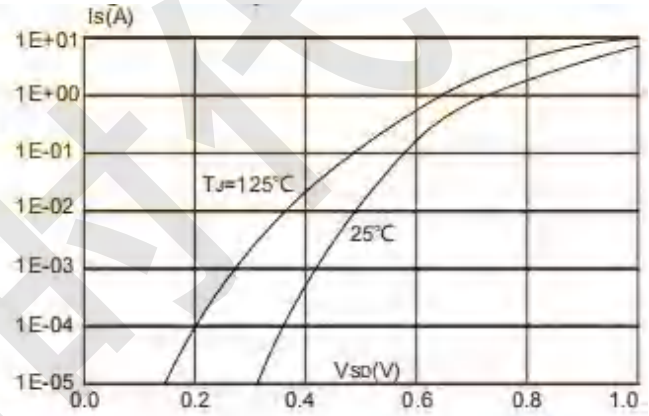


Figure 4: Body Diode Characteristics

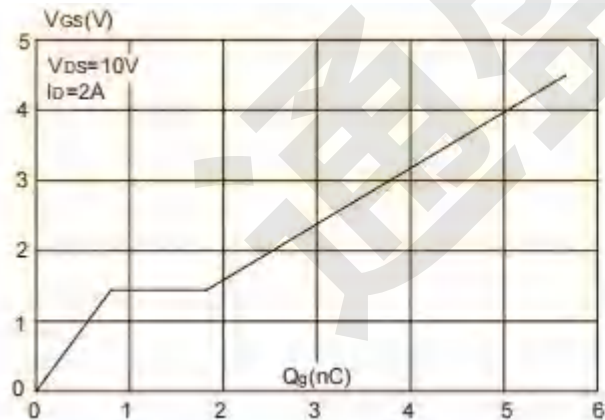


Figure 5: Gate Charge Characteristics

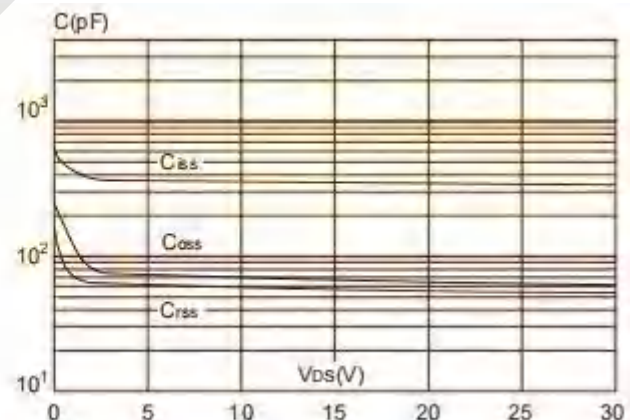


Figure 6: Capacitance Characteristics

Single N-Channel Power MOSFET

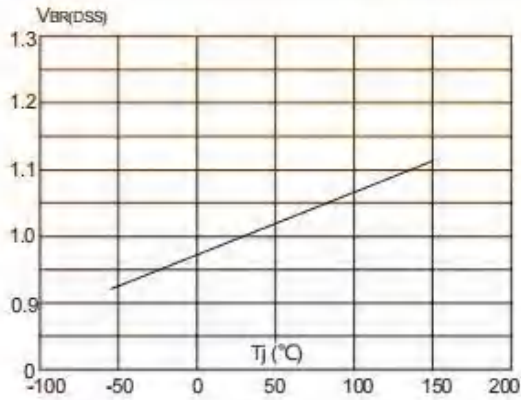


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

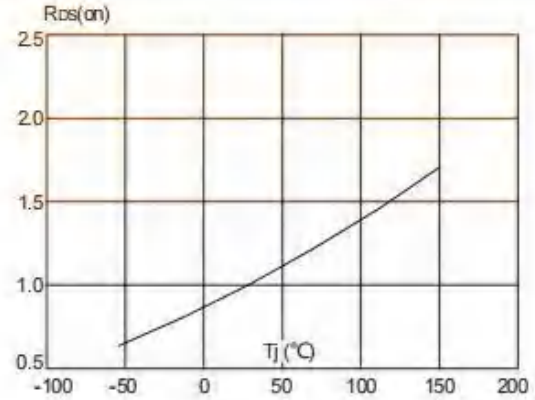


Figure 8: Normalized on Resistance vs. Junction Temperature

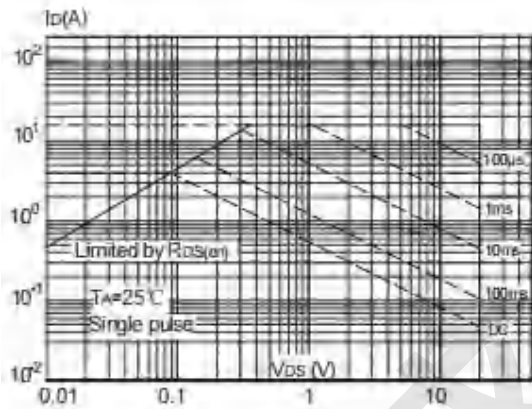


Figure 9: Maximum Safe Operating Area

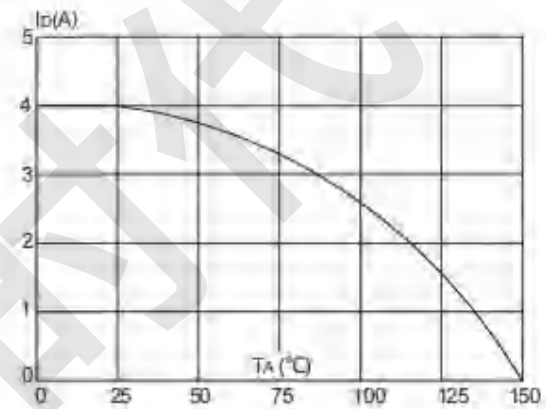


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

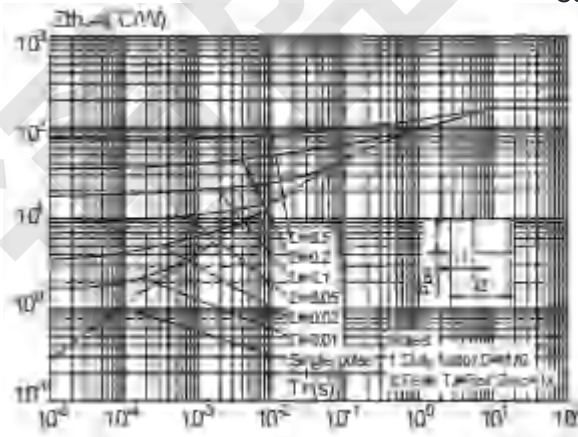
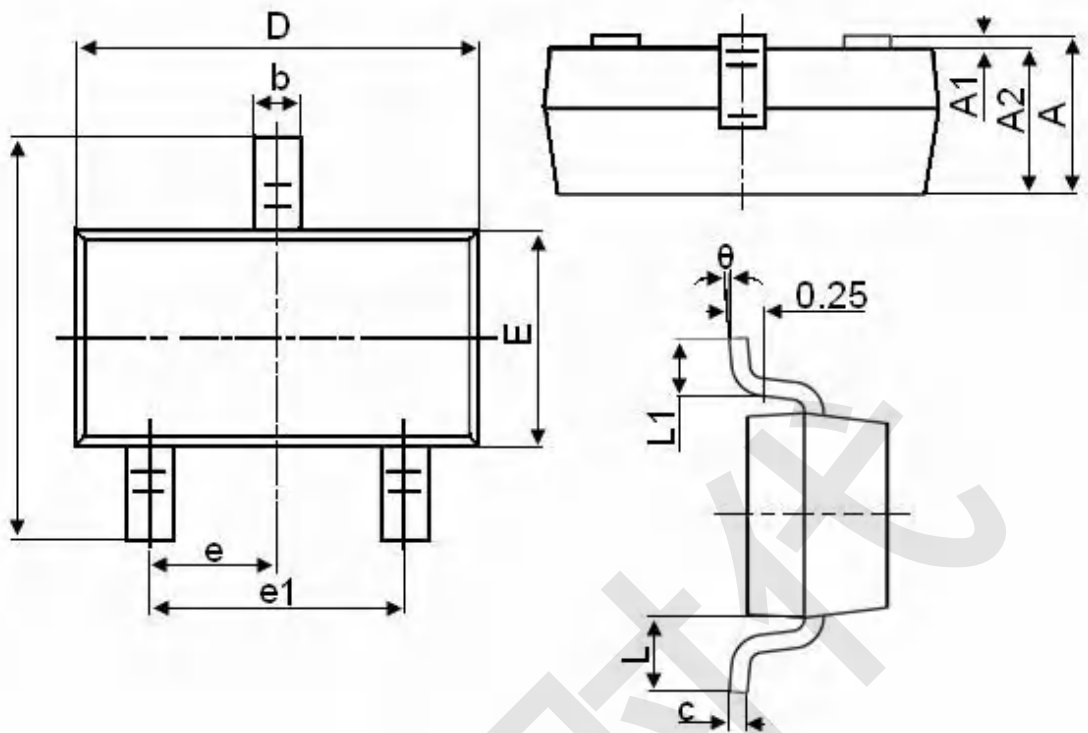


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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°



TS2300E

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Edition	Date	Change
Rve1.0	2022/11	Initial release

通盛时代