

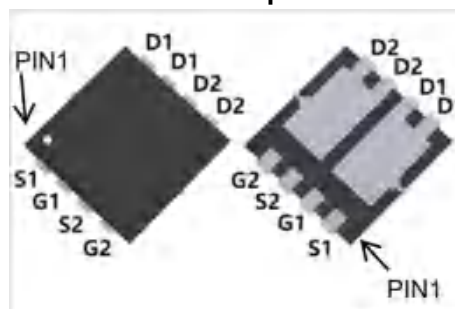
V _{DSS} (V)	R _{DS (ON)}	I _{D(A)}
30	15mΩ(Typ)@V _{GS} =10V	20
	21mΩ(Typ)@V _{GS} =4.5V	

FEATURE:

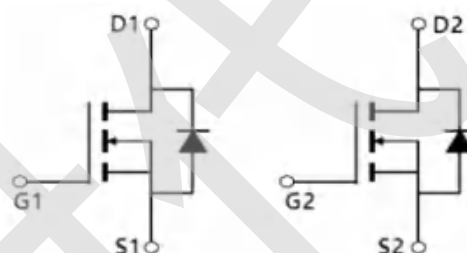
- The TS20DN03 is the high cell density trench Dual N-ch MOSFETS, which provides excellent R_{DS(ON)} and efficiency for most of the small power switching and load switch applications.

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

Pin Description



PDFN3X3-8L



Ordering and Marking Information

Product ID	Marking	Package	Packaging	Quantity
TS20DN03		PDFN3X3-8L	Tape&Reel	5000

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-Source Voltage	30	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current (V _{GS} = -4.5V)	T _c =25°C	20
		T _c =70°C	10
T _J	Maximum Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
I _{DM}	Pulsed Drain Current	56	A
P _D	Maximum Power Dissipation	T _c =25°C	6
		T _A =75°C	---
E _{AS}	Avalanche Energy, Single Pulsed	12.1	mJ
R _{θJC}	Thermal Resistance-Junction to Case	---	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	75	°C/W



TS20DN03

Dual N-Channel Power MOSFET

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	30	---	---	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=5A	---	15	20	mΩ
		VGS=4.5V, ID=3A	---	21	29	mΩ
IGSS	Gate-source leakage current	VGS=±20V, VDS=0V	---	---	±100	nA
IDSS	Zero gate voltage drain current	VDS=30V, VGS=0V, T _J =25°C	---	---	1	μA
		T _J =55°C	---	---	5	
Dynamic Characteristic						
Ciss	Input Capacitance	VGS=0V, VDS=15V, Frequency=1.0MHz	---	490	---	pF
Coss	Output Capacitance		---	79	---	
Crss	Reverse Transfer Capacitance		---	61	---	
QG	Gate Total Charge	VDS=15V, VGS=10V, IDS=5.8A	---	5.2	---	nC
Qgs	Gate-Source charge		---	0.9	---	
Qgd	Gate-Drain charge		---	1.3	---	
td(on)	Turn-on delay time	VDD=15V, VGS=10V, RG=3Ω, ID=3A	---	4.5	---	ns
tr	Turn-on Rise Time		---	2.5	---	
td(off)	Turn-off Delay Time		---	14.5	---	
tf	Turn-off Fall Time		---	3.5	---	
RG	Gate Resistance	VGS=0V, VDS=0V, F=1MHz	---	---	---	Ω
Diode Characteristics						
Is	Continuous Source Current	V _G =V _b =0V, Force Current	---	---	28	A
VSD	Diode Forward Voltage	VGS=0V, IS=1A, T _J =25°C	---	---	1.2	V
trr	Reverse Recovery Time	ISD=6A, dISD/dt=-100A/μs	---	---	---	ns
Qrr	Reverse Recovery Charge		---	---	---	nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1: Output Characteristics

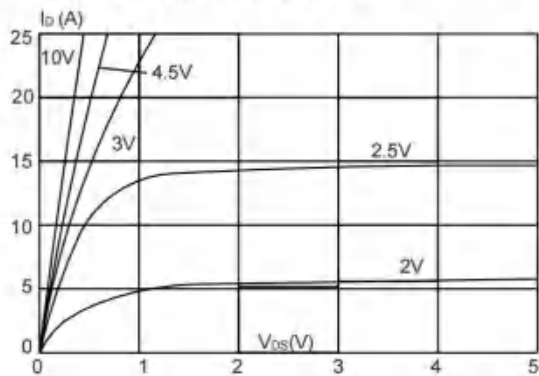


Figure 2: Typical Transfer Characteristics

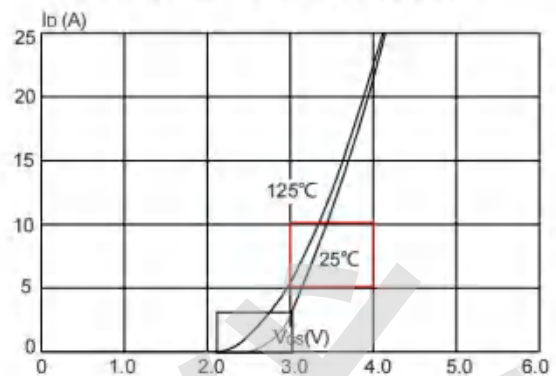


Figure 3: On-resistance vs. Drain Current

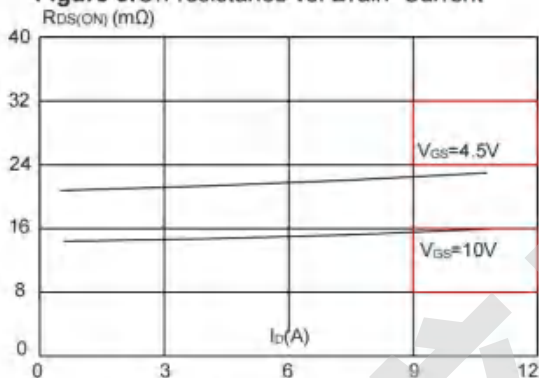


Figure 4: Body Diode Characteristics

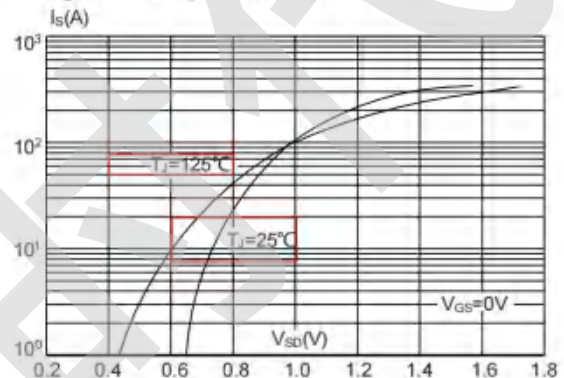


Figure 5: Gate Charge Characteristics

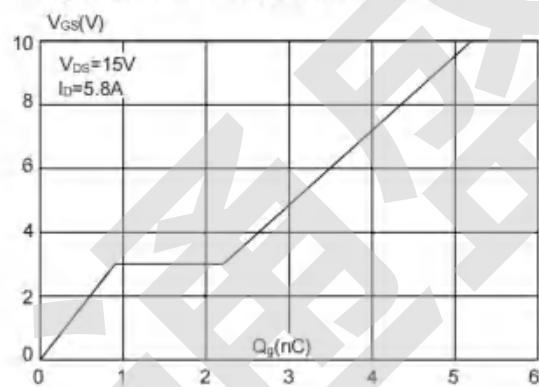


Figure 6: Capacitance Characteristics

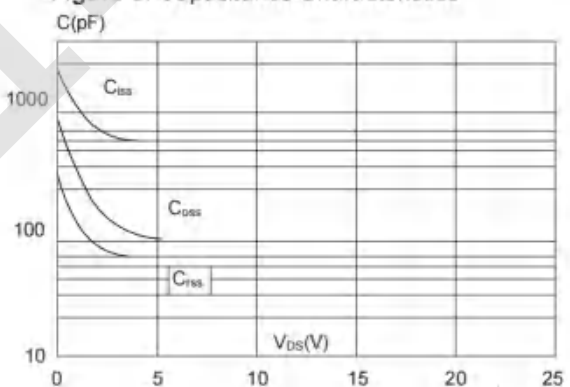


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

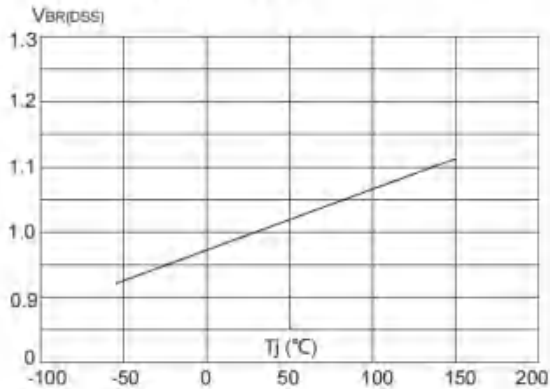


Figure 8: Normalized on Resistance vs. Junction Temperature

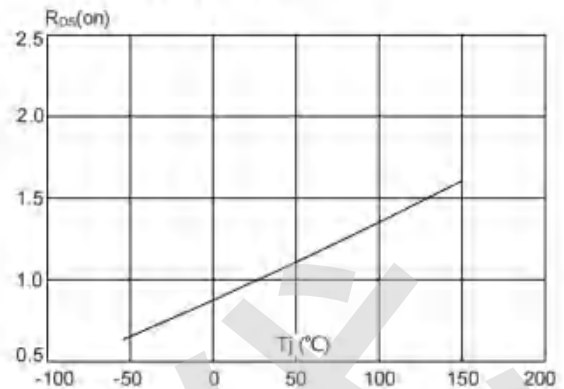


Figure 9: Maximum Safe Operating Area

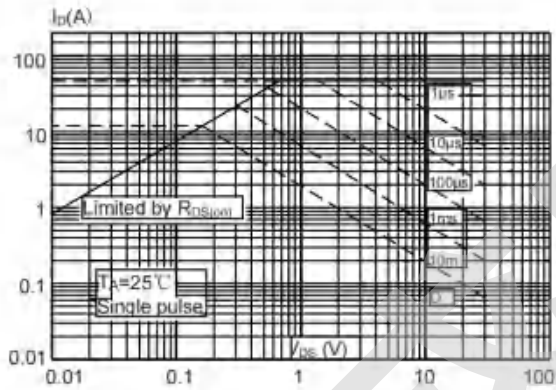


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

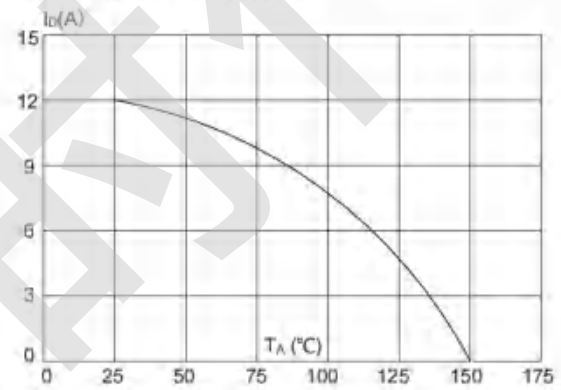
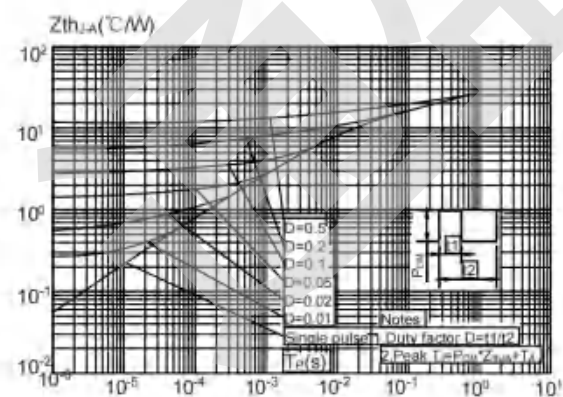
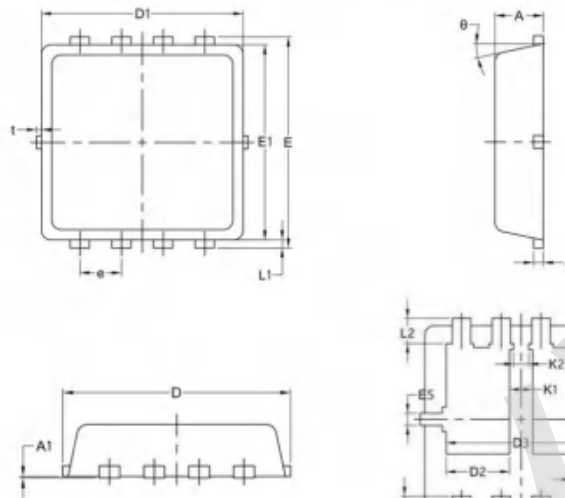


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Mechanical Data-PDFN3*3-8L Double



Symbol	Common		
	Mm		
	Min	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.25	0.30	0.39
c	0.14	0.152	0.20
D	3.20	3.30	3.45
D1	3.05	3.15	3.25
D2	0.84	1.04	1.24
D3	2.30	2.45	2.60
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.60	1.74	1.90
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.50	0.69	0.80
K1	0.30	0.38	0.53
K2	0.15	0.25	0.35
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
L2	0.27	0.42	0.57
t	0	0.075	0.13
Φ	10°	12°	14°



TS20DN03

Dual N-Channel Power MOSFET

Edition	Date	Change
Rve1.0	2022/11	Initial release

通盛时代