

Description

The 15N10 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

D S G

TO252-2L

General Features

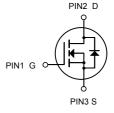
 $V_{DS} = 100V, I_{D} = 15A$

 $R_{DS(ON)}$ <112m Ω @ V_{GS} =10V

Application

Power switch

DC/DC converters



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
15N10	TO252-2L	15N10 XXX YYYY	2500

Absolute Maximum Ratings (Tc=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
Vss	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	15	А
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ¹	7.7	А
ID@Ta=25°C	Continuous Drain Current, V _{GS} @ 10V ¹	3	А
ID@T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ¹	2.4	А
Ірм	Pulsed Drain Current ²	24	А
EAS	Single Pulse Avalanche Energy ³	6.1	mJ
las	Avalanche Current	11	А
P _D @T _C =25°C	Total Power Dissipation ³	34.7	W
P _D @T _A =25°C	Total Power Dissipation ³	2	W
Тѕтс	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
ReJA	Thermal Resistance Junction-ambient ¹	62 °C/N	
Rejc	Thermal Resistance Junction-Case ¹	3.6 °C	



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100			V
2BVpss/2Tj	BVDSS Temperature Coefficient	Reference to 25°C , I _D =1mA		0.098		V/°C
Б		V _{GS} =10V , I _D =10A		100	112	mΩ
RDS(ON)	Static Drain-Source On-Resistance ²	V _{GS} =4.5V , I _D =8A		117	130	$m\Omega$
V _{GS} (th)	Gate Threshold Voltage		1.0		2.5	V
		V _{GS} =V _{DS} , I _D =250uA				
₹VGS(th)	V _{GS(th)} Temperature Coefficient			-4.57		mV/°C
la co	Drain Course Leekene Current	V _{DS} =80V , V _{GS} =0V , T _J =25 °C			1	uA
loss	Drain-Source Leakage Current	V_{DS} =80V , V_{GS} =0V , T_{J} =55 $^{\circ}$ C			5	
Igss	Gate-Source Leakage Current	V_{GS} = $\pm 20V$, V_{DS} = $0V$			±100	nA
gfs	Forward Transconductance	V _{DS} =5V , I _D =10A		13		S
Rg	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz		2		Ω
Qg	Total Gate Charge (10V)			26.2		
Qgs	Gate-Source Charge	V _{DS} =80V , V _{GS} =10V , I _D =10A		4.6		nC
Qgd	Gate-Drain Charge			5.1		
Td(on)	Turn-On Delay Time			4.2		
Tr	Rise Time	V _{DD} =50V , V _{GS} =10V , —R _G =3.3		8.2		ns
Td(off)	Turn-Off Delay Time	I _D =10A		35.6		
Tf	Fall Time			9.6		
Ciss	Input Capacitance			1535		
Coss	Output Capacitance	V _{DS} =15V , V _{GS} =0V , f=1MHz		60		pF
Crss	Reverse Transfer Capacitance			37		
ls	Continuous Source Current ^{1,5}				12	Α
lsм	Pulsed Source Current ^{2,5}	V _G =V _D =0V , Force Current			24	Α
VsD	Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25°C			1.2	V
t _{rr}	Reverse Recovery Time	I= 40A		37		nS
Qrr	Reverse Recovery Charge	IF=10A , dI/dt=100A/μs , T _J =25°C		27.3		nC

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width \leqq 300us , duty cycle \leqq 2%
- 3. The EAS data shows Max. rating . The test condition is V_{DD} =25V, V_{GS} =10V, L=0.1mH, I_{AS} =11A
- 4.The power dissipation is limited by 150°C junction temperature
- 5 .The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.



Typical Characteristics

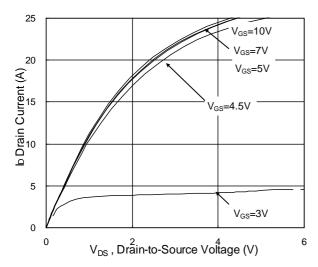


Fig.1 Typical Output Characteristics

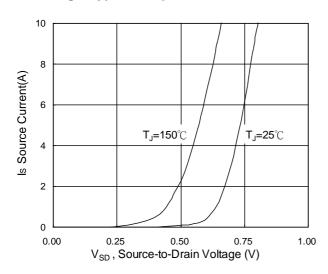


Fig.3 Forward Characteristics Of Reverse

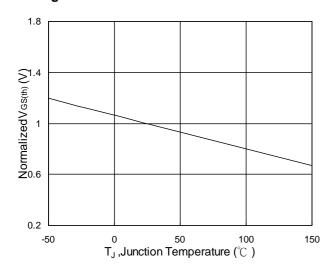


Fig.5 Normalized V_{GS(th)} vs. T_J

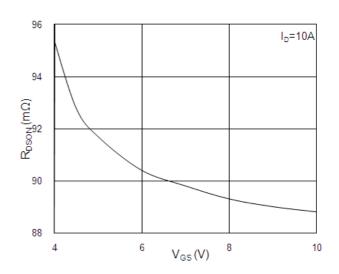


Fig.2 On-Resistance vs. Gate-Source

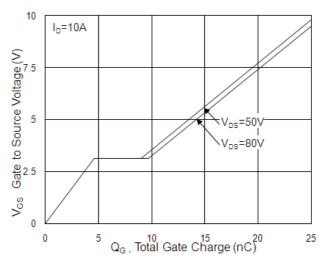


Fig.4 Gate-Charge Characteristics

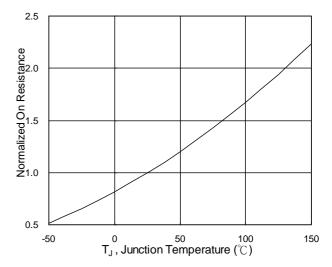
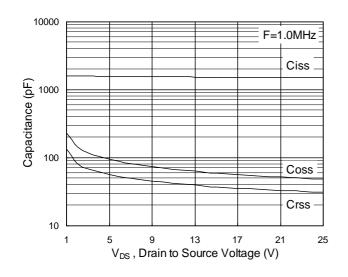


Fig.6 Normalized R_{DSON} vs. T_J



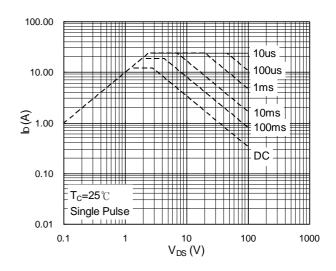


Fig.7 Capacitance

Fig.8 Safe Operating Area

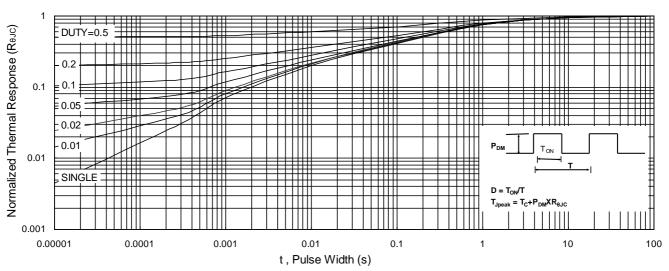


Fig.9 Normalized Maximum Transient Thermal Impedance

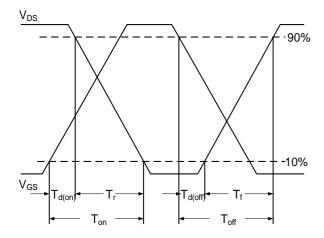


Fig.10 Switching Time Waveform

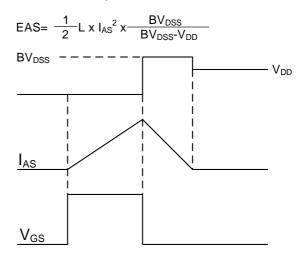
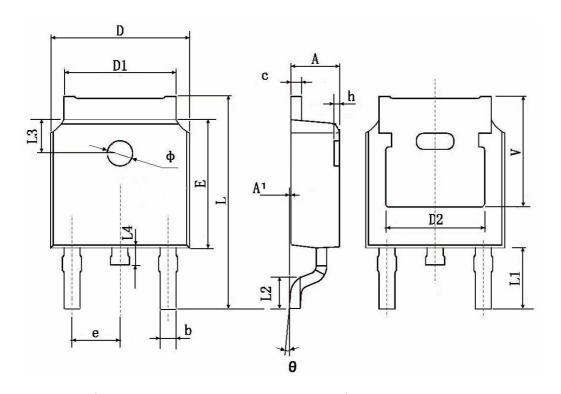


Fig.11 Unclamped Inductive Switching Waveform



TO252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches		
	Min.	Max.	Min.	Max.	
А	2.200	2.400	0.087	0.094	
A1	0.000	0.127	0.000	0.005	
b	0.660	0.860	0.026	0.034	
С	0.460	0.580	0.018	0.023	
D	6.500	6.700	0.256	0.264	
D1	5.100	5.460	0.201	0.215	
D2	0.483 TYP.		0.190 TYP.		
Е	6.000	6.200	0.236	0.244	
е	2.186	2.386	0.086	0.094	
L	9.800	10.400	0.386	0.409	
L1	2.900 TYP.		0.114 TYP.		
L2	1.400	1.700	0.055	0.067	
L3	1.600 TYP.		0.063 TYP.		
L4	0.600	1.000	0.024	0.039	
Ф	1.100	1.300	0.043	0.051	
θ	0°	8°	0°	8°	
h	0.000	0.300	0.000	0.012	
V	5.350 TYP.		0.211 TYP.		



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