

N-Channel Enhancement Mode Power MOSFET

Description

The TF15N10B uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other switching application.

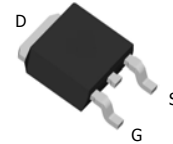
General Features

- High power and current handling capability
- Lead free product is acquired
- Surface mount package

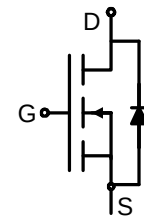
Application

- Battery switch
- DC/DC converter

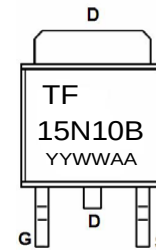
TO-252



Equivalent Circuit



MARKING



YY :year code, WW :week code, AA:device code

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous $T_C=25^\circ\text{C}$	I_D	15	A
Drain Current-Continuous $T_C=100^\circ\text{C}$		10.0	A
Drain Current-Pulsed ^(Note 1)	I_{DM}	55	A
Maximum Power Dissipation $T_C=25^\circ\text{C}$	P_D	40	W
Maximum Power Dissipation $T_C=100^\circ\text{C}$		20	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Case ^(Note 2)	$R_{\theta JC}$	3.2	$^\circ\text{C/W}$
--	-----------------	-----	--------------------



SHENZHEN TUOFENG SEMICONDUCTOR TECHNOLOGY CO.,LTD
N-CHANNEL ENHANCEMENT MODE POWER MOSFET

TF15N10B

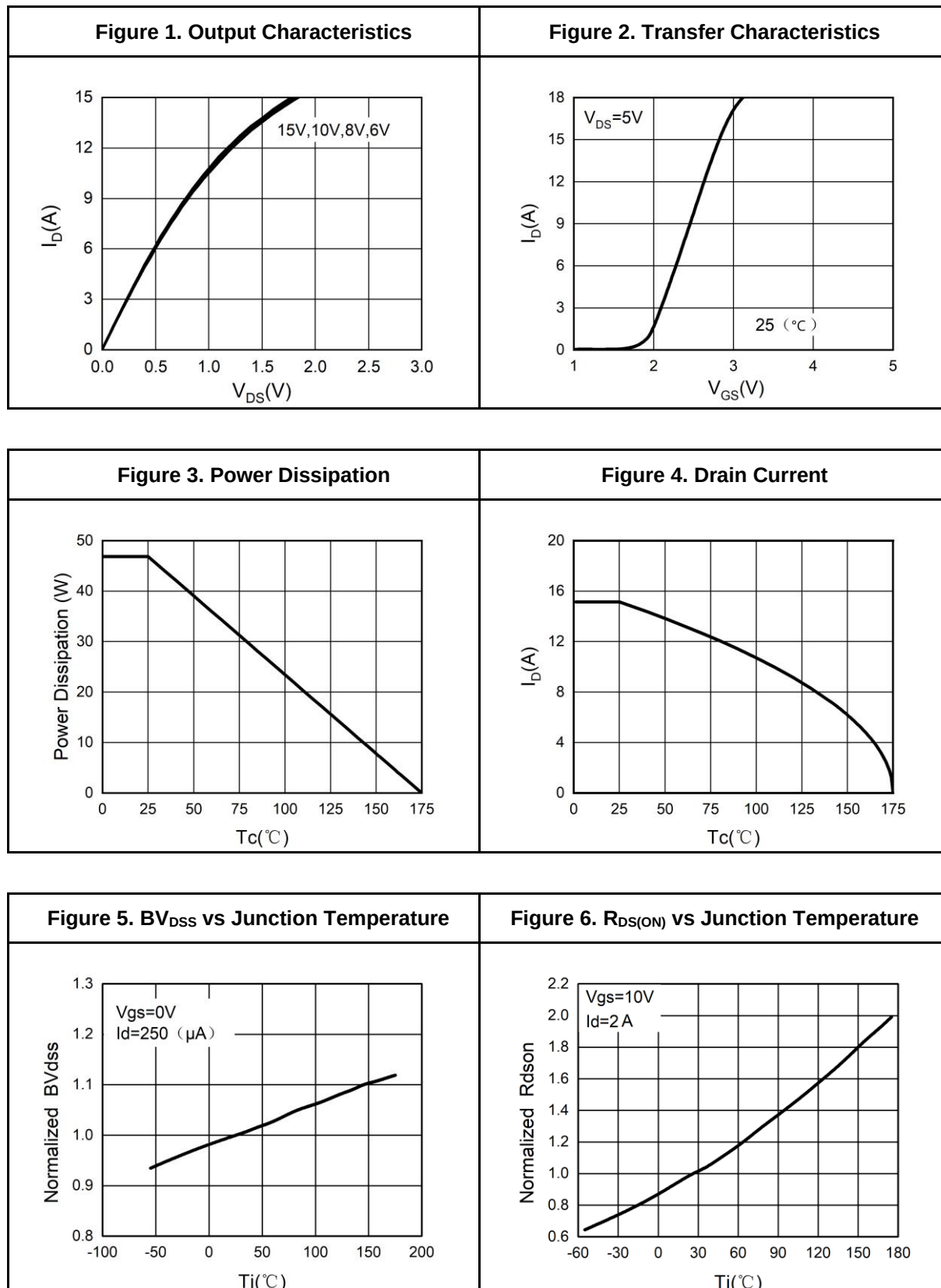
Electrical Characteristics ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	105	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	83	95	m Ω
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=8A$	-	89	110	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=10A$	3.0	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	951	-	PF
Output Capacitance	C_{oss}		-	32.3	-	PF
Reverse Transfer Capacitance	C_{rss}		-	27.3	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=50V, R_L=5\Omega$ $V_{GS}=10V, R_G=3\Omega$	-	6.6	-	nS
Turn-on Rise Time	t_r		-	46	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	31	-	nS
Turn-Off Fall Time	t_f		-	4.0	-	nS
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=2A,$ $V_{GS}=10V$	-	20.2		nC
Gate-Source Charge	Q_{gs}		-	2.1	-	nC
Gate-Drain Charge	Q_{gd}		-	4.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=2.0A$	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	12	A
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}C, I_F=2.0A$ $di/dt=100A/\mu s^{(Note3)}$	-	26		nS
Reverse Recovery Charge	Q_{rr}		-	35		nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

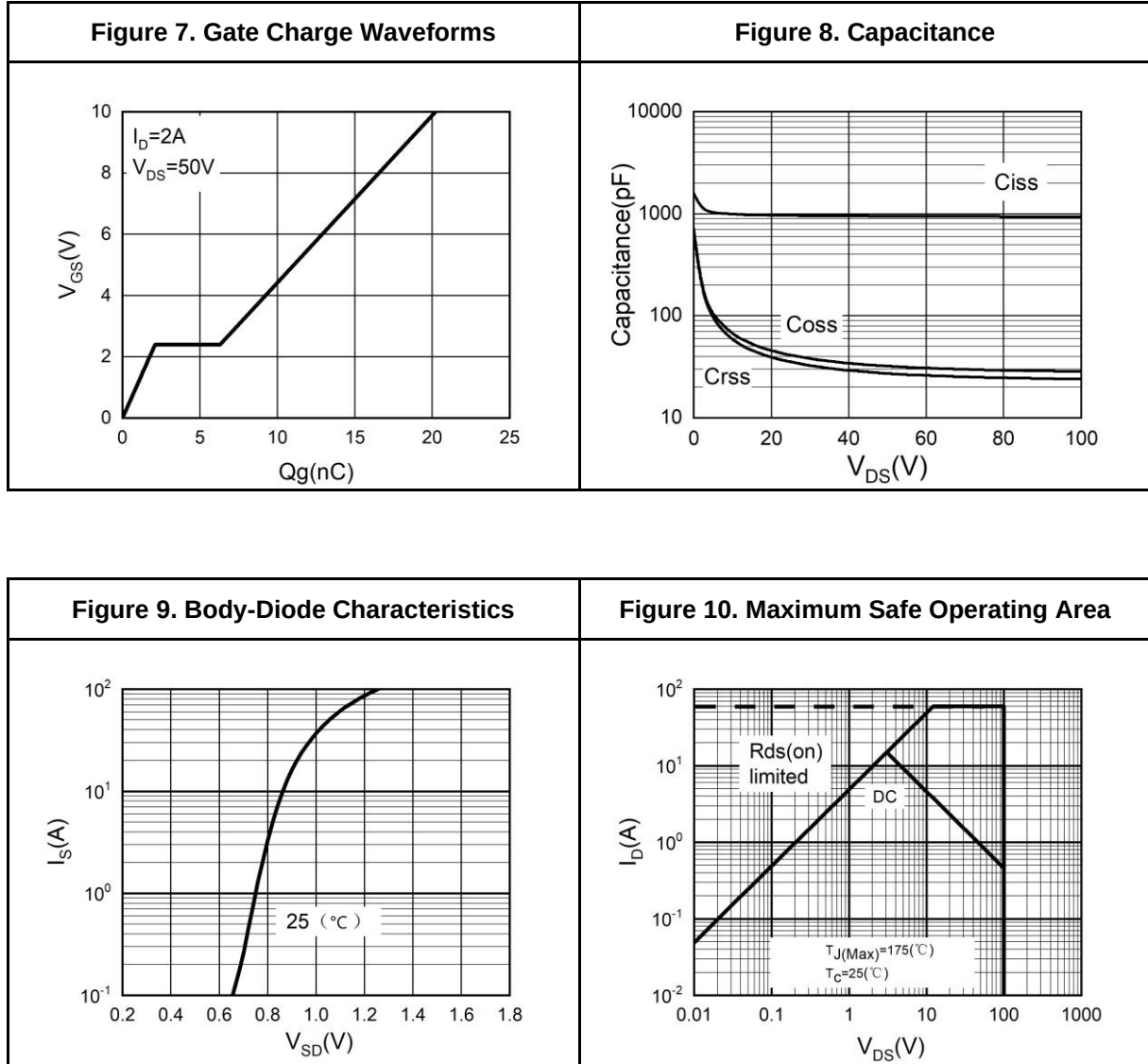
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical And Thermal Characteristics (Curves)

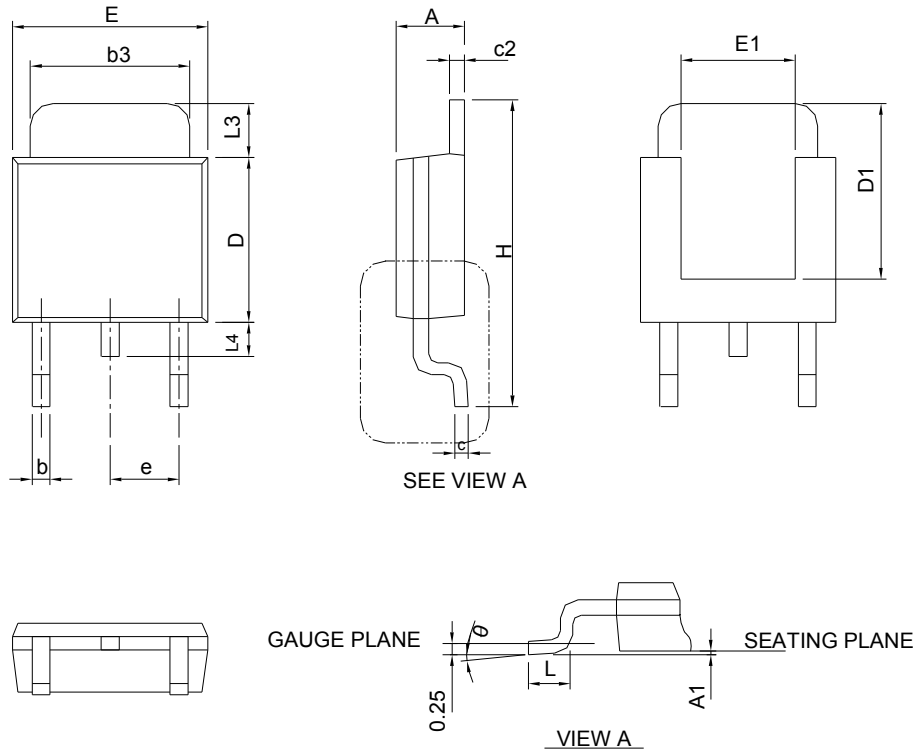


Typical Electrical And Thermal Characteristics (Curves)



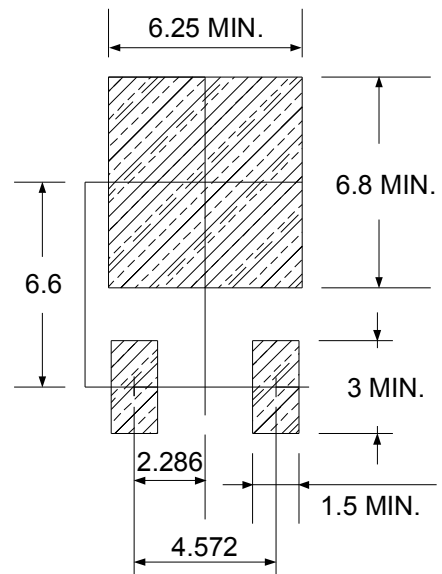
Package Information

TO-252-2L



SYMBOL	TO-252-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1		0.13		0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4		1.02		0.040
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN



UNIT: mm