

General Description

The TF80N03B combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

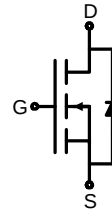
Features

Advance high cell density Trench technology
Low $R_{DS(ON)}$ to minimize conductive loss
Low Gate Charge for fast switching
Low Thermal resistance

Application

MB/VGA Vcore
SMPS 2nd Synchronous Rectifier
POL application
BLDC Motor driver

Product Summary



$V_{DS} = 30V$ $I_D = 80A$
 $R_{DS(ON)}(10V_{typ}) = 4.2m\Omega$
 $R_{DS(ON)}(4.5V_{typ}) = 6.5m\Omega$



TO-251



TO-252

Ordering Information:

Part NO.	TF80N03B
Marking 1	80N03B:TF80N03B
Marking 2	TF:tuofeng; YY:year code; XX:Week; AA:device code
MOQ	TO-251:50/PCS TO-252:2500/PCS

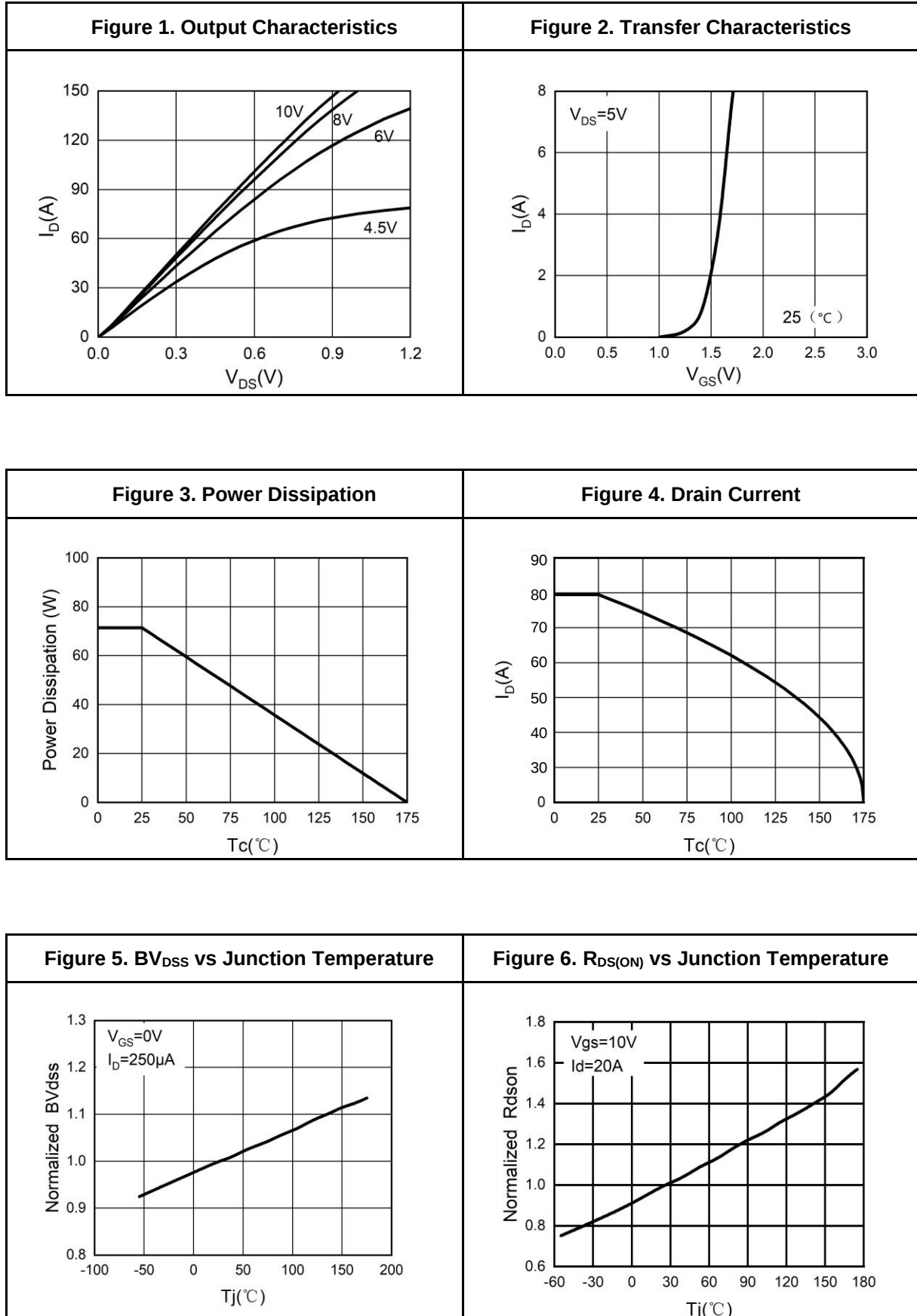
Absolute Maximum Ratings ($T_C = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D @ T_C = 25^\circ C$	80	A
	$I_D @ T_C = 75^\circ C$	60	A
	$I_D @ T_C = 100^\circ C$	48	A
Pulsed Drain Current ①	I_{DM}	270	A
Total Power Dissipation	$P_D @ T_C = 25^\circ C$	45	W
Total Power Dissipation	$P_D @ T_A = 25^\circ C$	2.0	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$

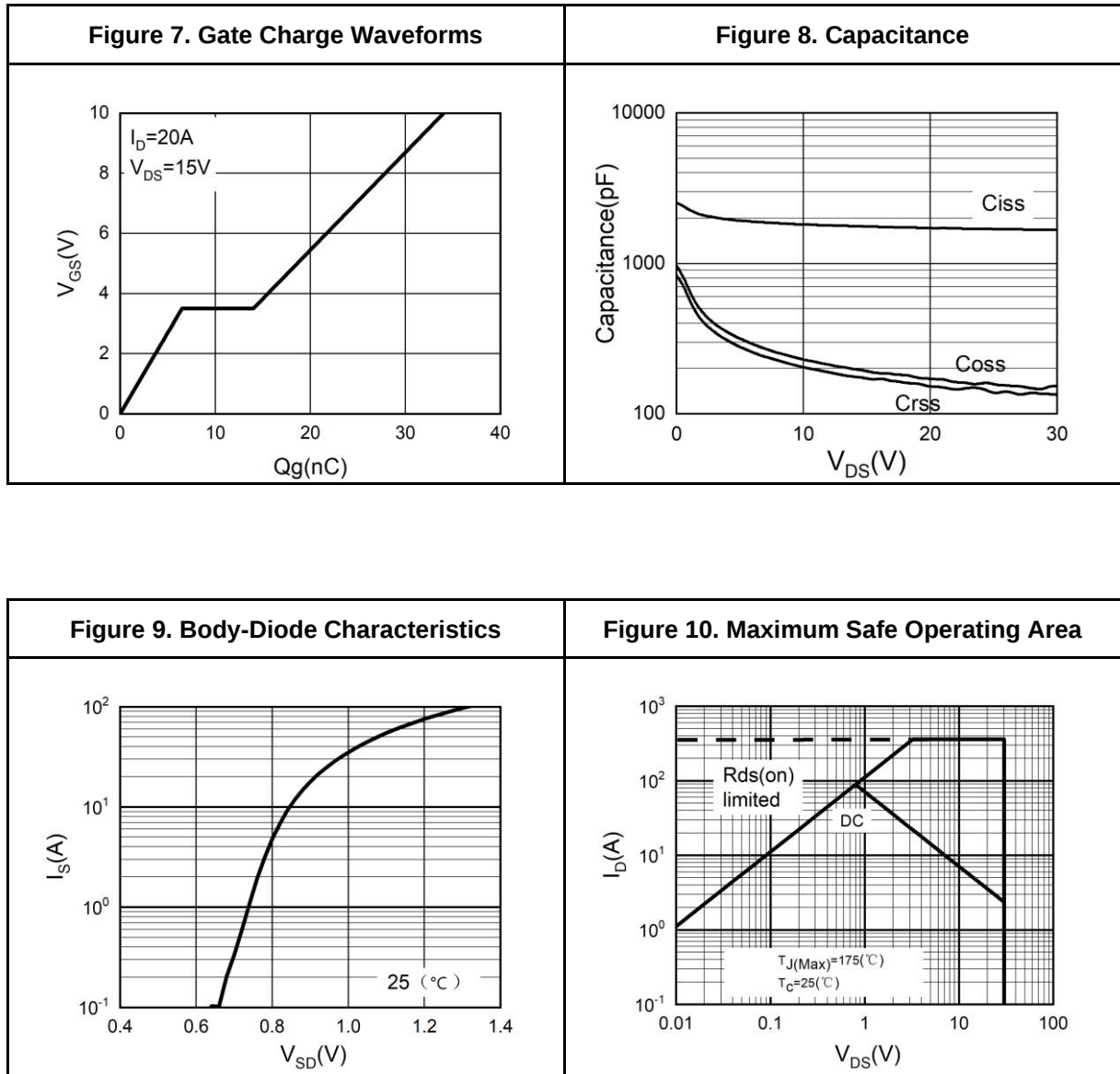
Note: ① Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

Single Pulse Avalanche Energy	E _{AS}		135		mJ	
Avalanche Current	I _{AS} I _{AR}		30		A	
●Thermal resistance						
Parameter		Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case		R _{thJC}	-	-	2.9	° C/W
Thermal resistance, junction - ambient		R _{thJA}	-	-	57	° C/W
Soldering temperature, wave soldering for 8s		T _{sold}	-	-	265	° C
●Electronic Characteristics						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =250uA	30			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.6	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	uA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±20V ,V _{DS} =0V			±100	nA
Static Drain-source On Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =30A		4.2	5.5	mΩ
		V _{GS} =4.5V, I _D =20A		6.5	9.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =15V, I _D =20A		18		S
Source-drain voltage	V _{SD}	IS=30A			1.20	V
●Electronic Characteristics						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	Vds=15V,Vgs=0V f = 1MHz	-	1760	-	pF
Output capacitance	Coss		-	193.0	-	
Reverse transfer capacitance	Crss		-	172.0	-	
●Gate Charge characteristics(T _a = 25°C)						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	R _g	f = 1MHz		1.60		Ω
Total gate charge	Qg	V _{DD} = 15V I _D = 20A V _{GS} = 10V	-	34.0	-	nC
Gate - Source charge	Qgs		-	6.50	-	
Gate - Drain charge	Qgd		-	7.50	-	
Turn-ON Delay time	t _{D(on)}	V _{GS} =10V ,V _{DS} =15V R _G =6Ω, R _L =0.75Ω		7.00		ns
Turn-ON Rise time	t _r			14.0		ns
Turn-Off Delay time	t _{D(off)}			34.0		ns
Turn-Off Fall time	t _f			11.0		ns

Typical Electrical And Thermal Characteristics (Curves)

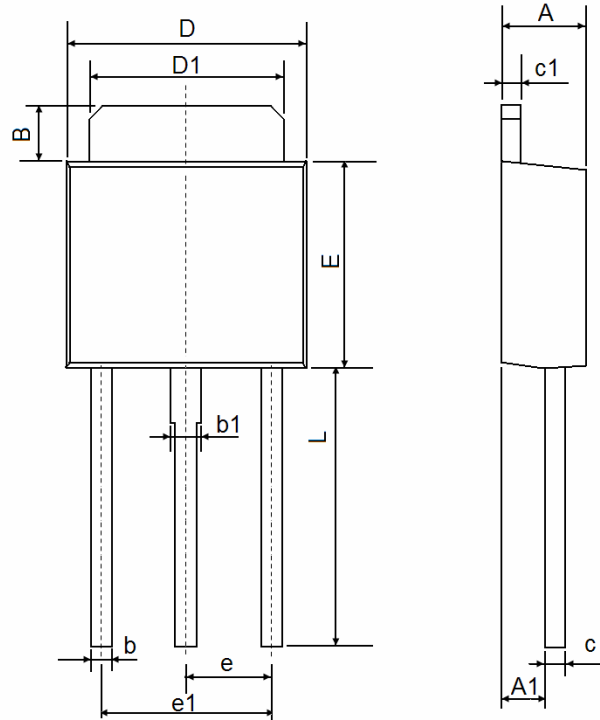


Typical Electrical And Thermal Characteristics (Curves)



Package Information

TO-251



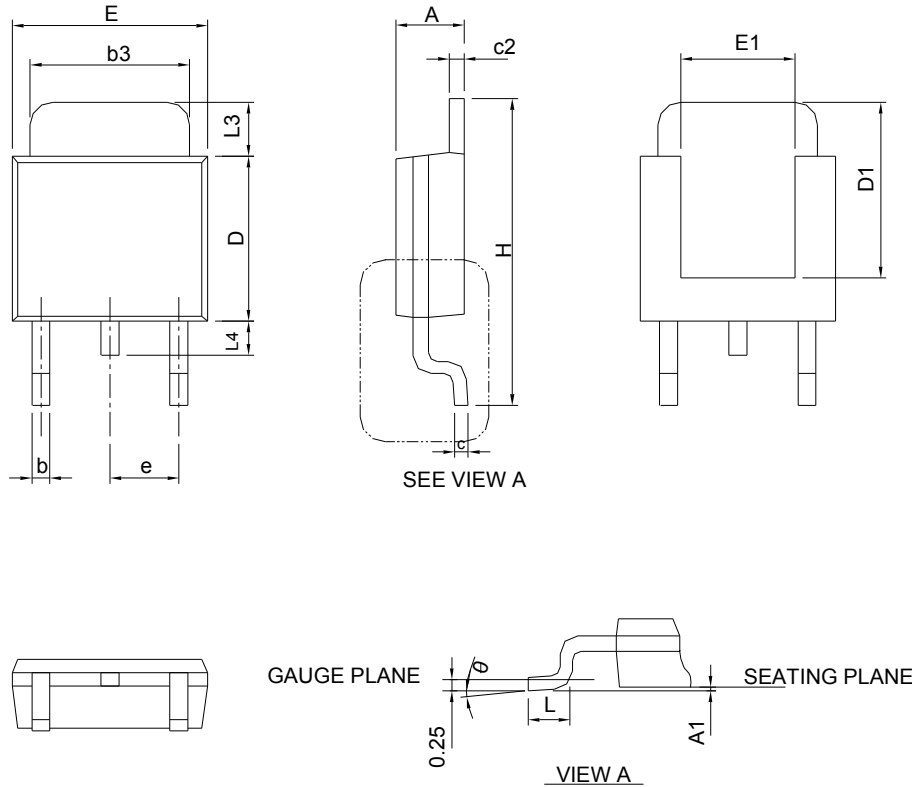
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	0.700	1.000	0.028	0.040
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	6.000	0.213	0.237
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	4.900	9.400	0.194	0.372

Notes

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact

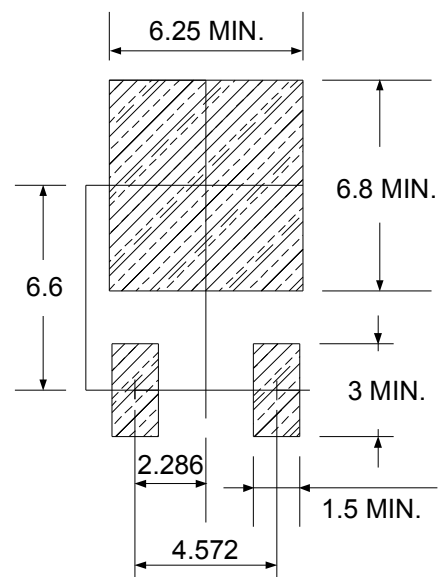
Package Information

TO-252



DIMENSIONS	TO-252			
	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