

TFD085N02 Dual N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)typ}$	$I_D Max$
20V	7.50mΩ @ 4.5V	11A
	10.5mΩ @ 2.5V	

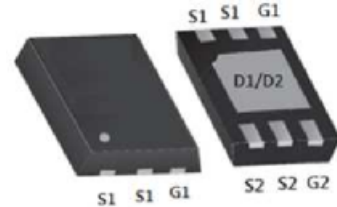
FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package

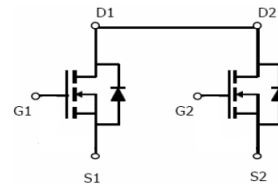
APPLICATION

- Battery Protection
- Load Switch
- Power Management

DFN-2x3-6L



Equivalent Circuit



MARKING



Y:year code W:week code AA:device code

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	11	A
Pulsed Drain Current (note 1)	I_{DM}	36	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	45	$^{\circ}\text{C/W}$
Maximum Power Dissipation	P_D	1.2	W
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 8 s)	T_L	260	$^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

T_a =25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V,V _{GS} = 0V			1	uA
Gate-body leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.50	0.65	1.00	V
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} =4.5V, I _D =5.0A	-	7.5	9.5	mΩ
		V _{GS} =3.5V, I _D =4.0A	-	8.5	10	mΩ
		V _{GS} =2.5V, I _D =3.0A	-	10.5	13	mΩ
Forward tranconductance (note 3)	g _{FS}	V _{DS} =5V, I _D =5A		12		S
Diode forward voltage (note 3)	V _{SD}	I _S =5.0A, V _{GS} = 0V			1.0	V
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f =1MHz		1030		pF
Output Capacitance	C _{oss}			185		pF
Reverse Transfer Capacitance	C _{rss}			174		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	t _{d(on)}	V _{GS} =10V, V _{DS} =10V, I _D =5.0A R _L =2.5Ω		12		ns
Turn-on rise time	t _r			18		ns
Turn-off delay time	t _{d(off)}			36		ns
Turn-off fall time	t _f			17		ns
Total Gate Charge	Q _g	V _{DS} =10V,V _{GS} =10V,I _D =5.0A		28.1		nC
Gate-Source Charge	Q _{gs}			1.90		nC
Gate-Drain Charge	Q _{gd}			6.40		nC

Notes :

- 1.Repetitive rating: Pluse width limited by maximum junction temperature
- 2.Surface Mounted on FR4 board, t≤10 sec.
3. Pulse test : Pulse width≤300μs, duty cycle≤2%.
4. Guaranteed by design, not subject to production.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

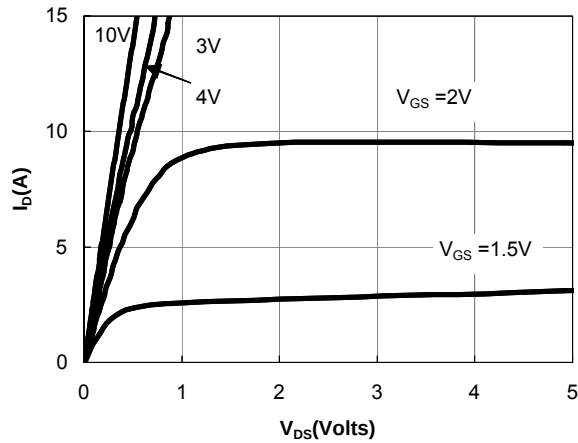


Figure 1: On-Regions Characteristic CS

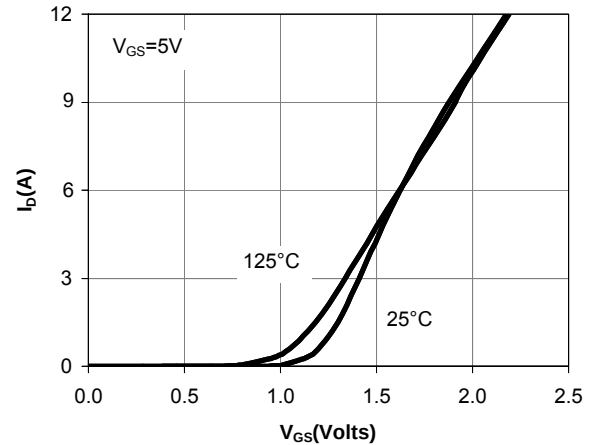


Figure 2: Transfer Characteristics

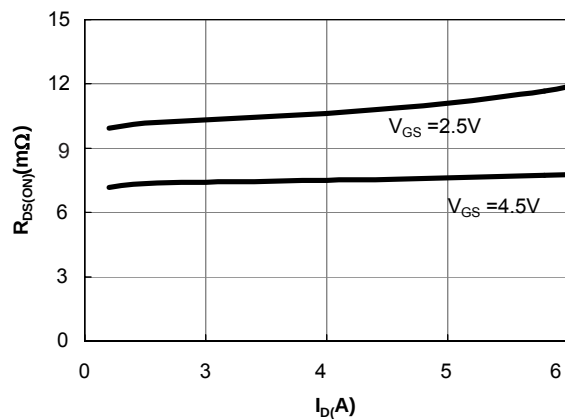


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

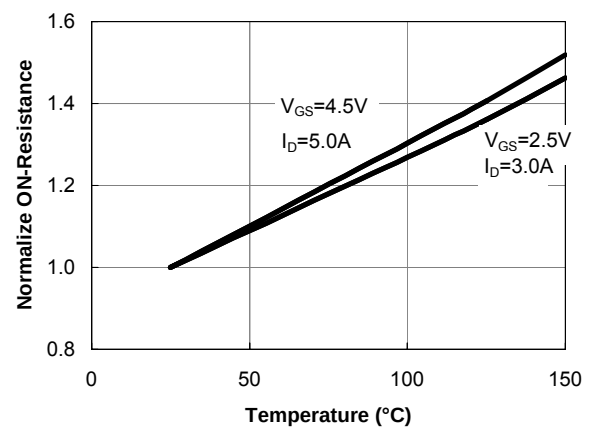


Figure 4: On-Resistance vs. Junction Temperature

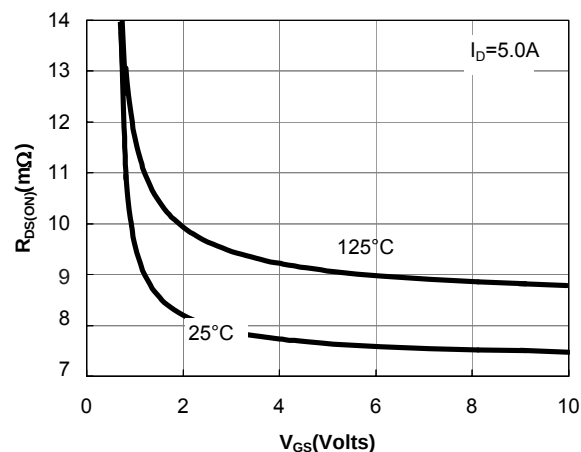


Figure 5: On-Resistance vs. Gate-Source Voltage

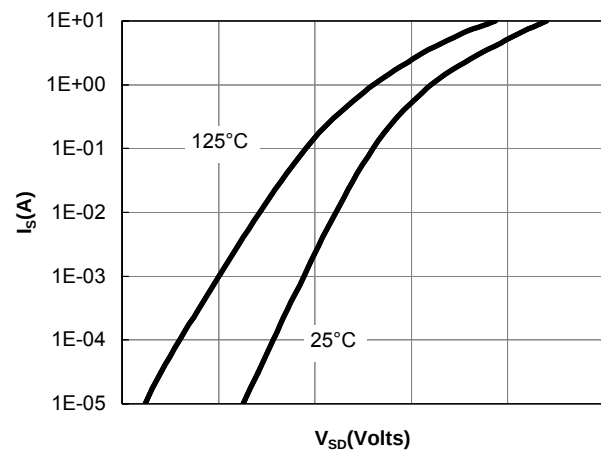
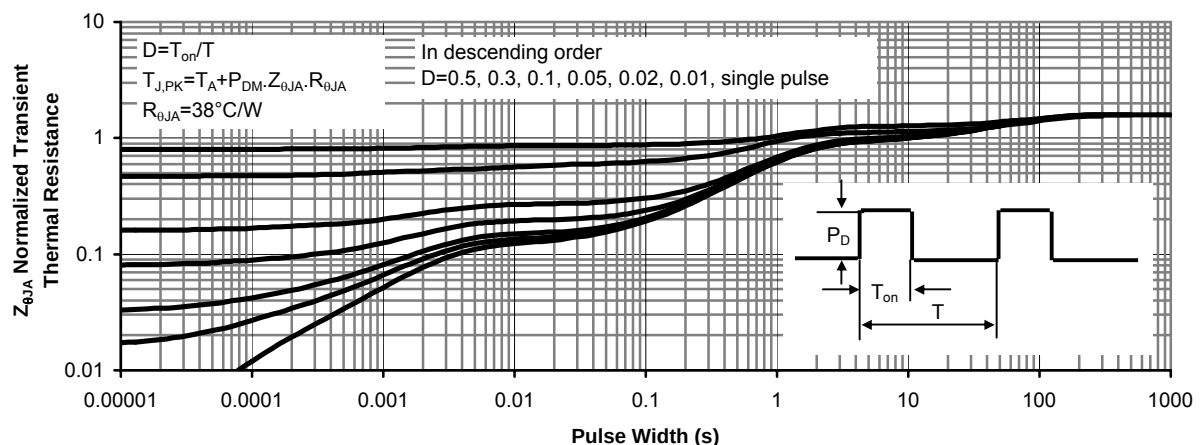
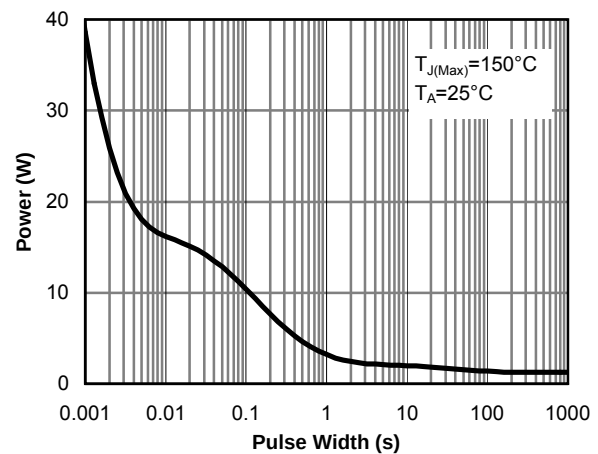
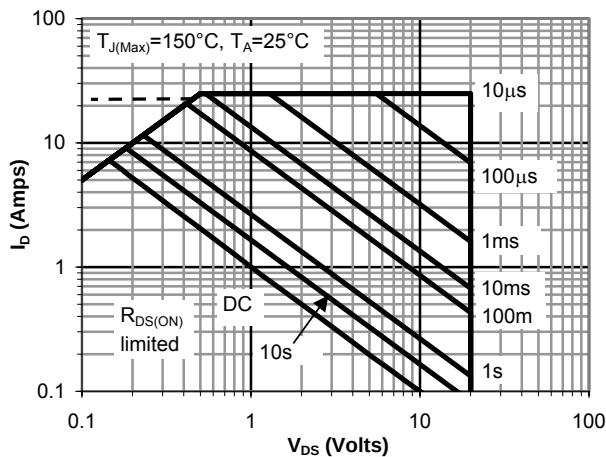
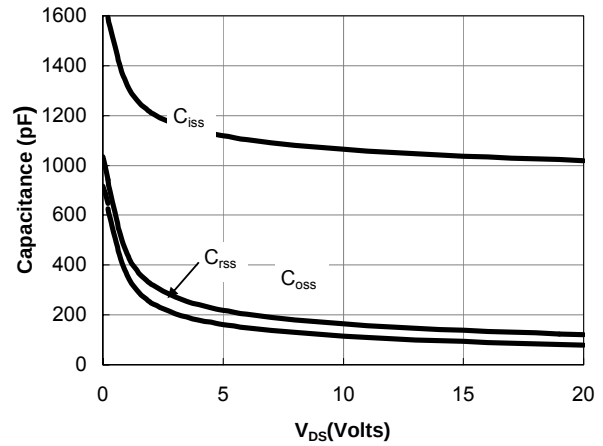
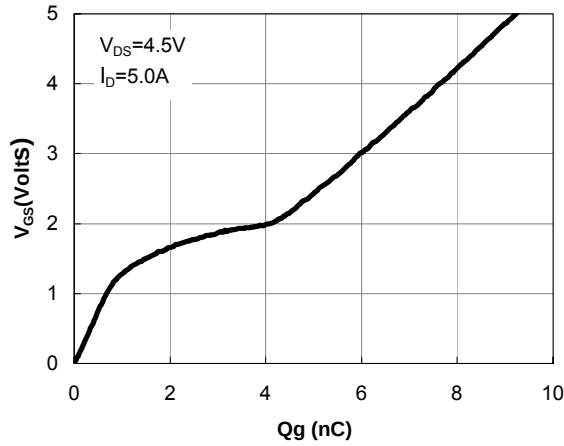
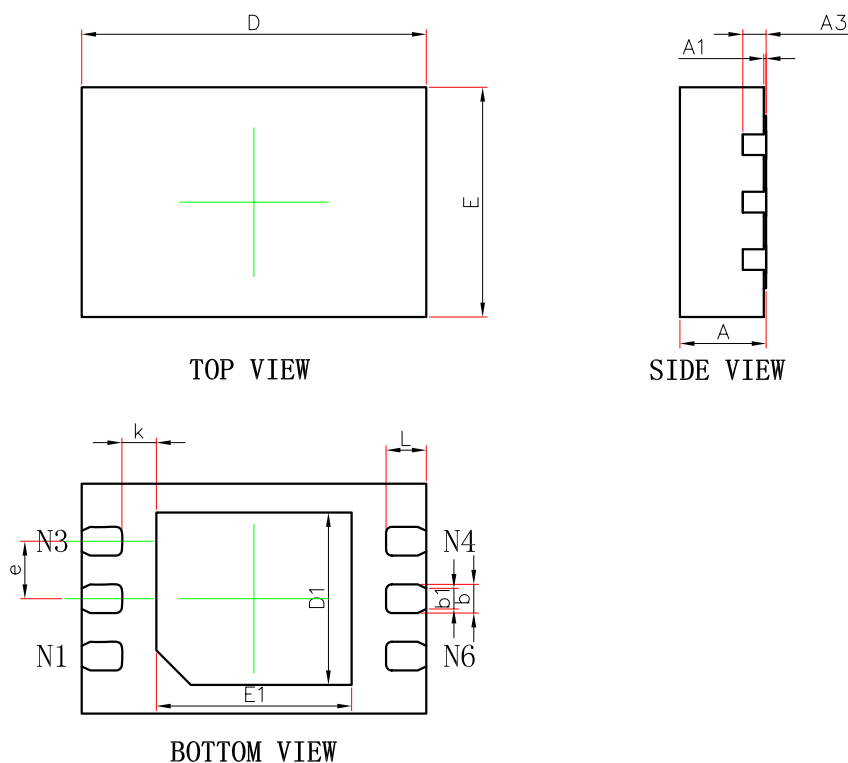


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



DFN2 × 3 Package Outline Data



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	2.950	3.050	0.116	0.120
E	1.950	2.050	0.077	0.081
D1	1.400	1.600	0.055	0.063
E1	1.600	1.800	0.063	0.071
b	0.200	0.300	0.008	0.012
b1	0.180REF.		0.007REF.	
e	0.500TYP.		0.020TYP.	
k	0.200MIN.		0.008MIN.	
L	0.300	0.400	0.012	0.016