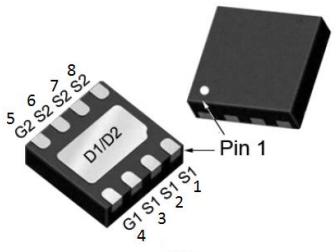
DFN3030-8L Plastic-Encapsulate MOSFETS

TFD030N02M

TFD030N02M Dual N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D Max
19V	3.2mΩ @ 4.5V	23A
	4.0mΩ @ 2.5V	

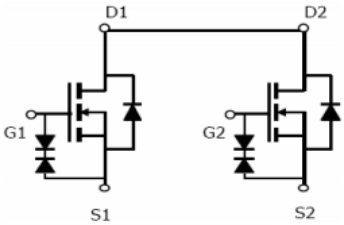
DFN3030-8L



FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handing Capability
- Surface Mount Package
- ESD Rating: 2000V HBM

Equivalent Circuit



APPLICATION

- Battery Protection
- Load Switch
- Power Management

MARKING

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

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	19	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	23	A
Pulsed Drain Current (note 1)	I_{DM}	85	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	32	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_j=25 ℃ 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	19	20		V
Zero gate voltage drain current	I_{DSS}	V_{DS} =19V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V			±10	uA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.45	0.70	1.00	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =8.0A	-	3.2	4.3	mΩ
		V_{GS} =3.6V, I_D =7.0A	-	3.4	4.5	mΩ
		V_{GS} =2.5V, I_D =6.0A	-	4.0	5.5	mΩ
Forward tranconductance (note 3)	g_{FS}	V_{DS} =5V, I_D =5.0A	45			S
Diode forward voltage (note 3)	V_{SD}	I_S=3.0A, V_{GS} = 0V			1.0	V
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		2360		pF
Output Capacitance	C_{oss}			282		pF
Reverse Transfer Capacitance	C_{rss}			178		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V, V_{DS}=10V, I_D=6.0A R_{GEN}=3Ω		12.5		ns
Turn-on rise time	t_r			31.2		ns
Turn-off delay time	$t_{d(off)}$			45.6		ns
Turn-off fall time	t_f			10.8		ns
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D=6.0A		27.5		nC
Gate-Source Charge	Q_{gs}			3.2		nC
Gate-Drain Charge	Q_{gd}			5.9		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

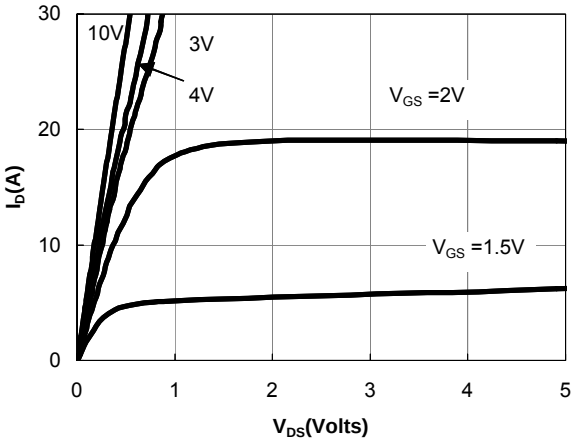


Figure 1: On-Regions Characteristics

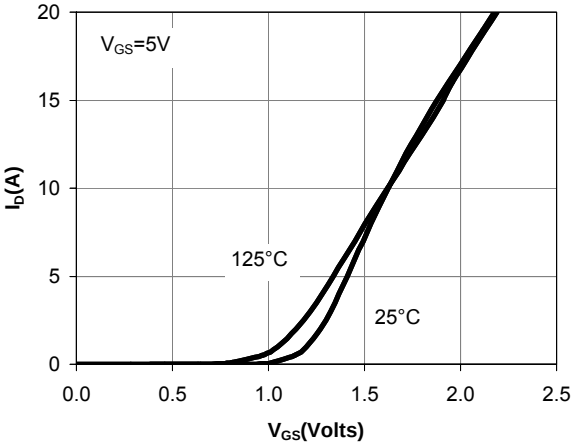


Figure 2: Transfer Characteristics

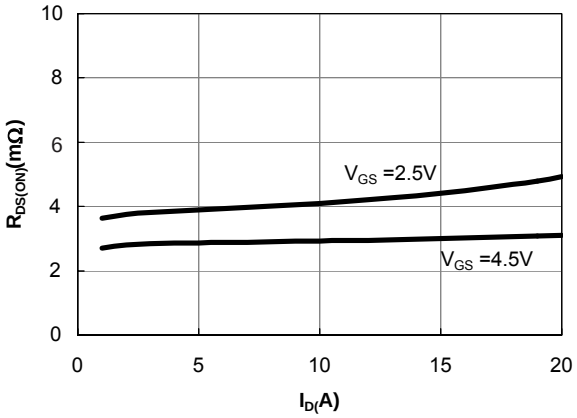


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

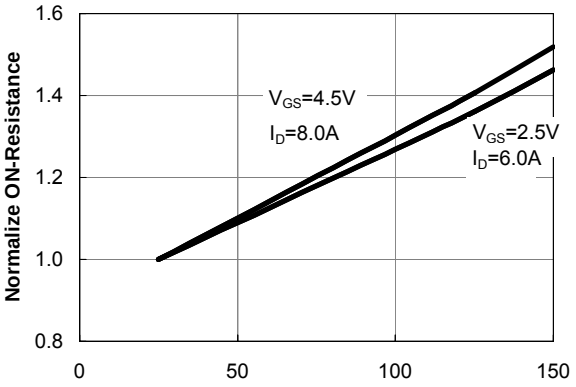


Figure 4: On-Resistance vs. Junction Temperature

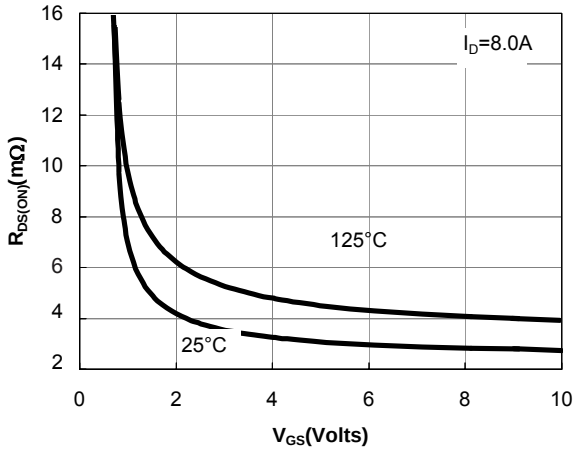


Figure 5: On-Resistance vs. Gate-Source Voltage

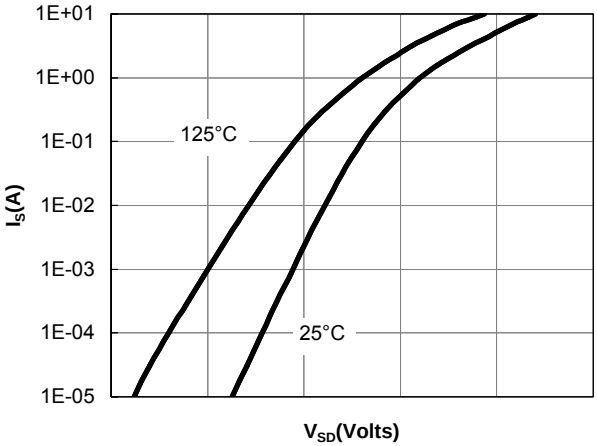


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

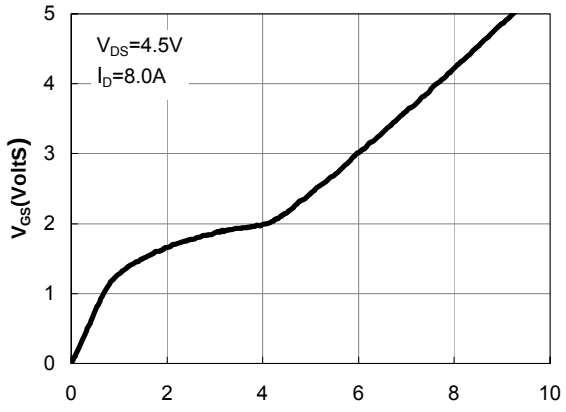


Figure 7: Gate-Charge Characteristics

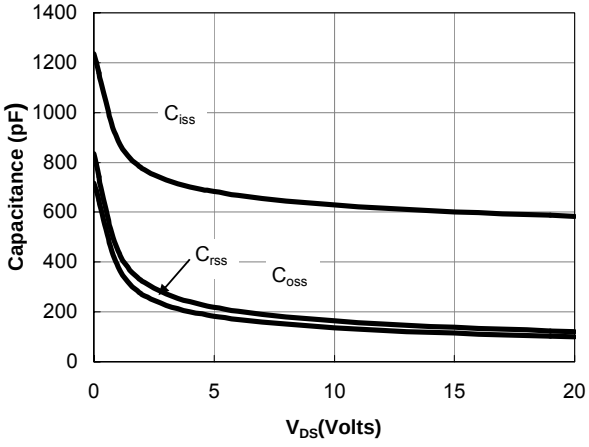


Figure 8: Capacitance Characteristics

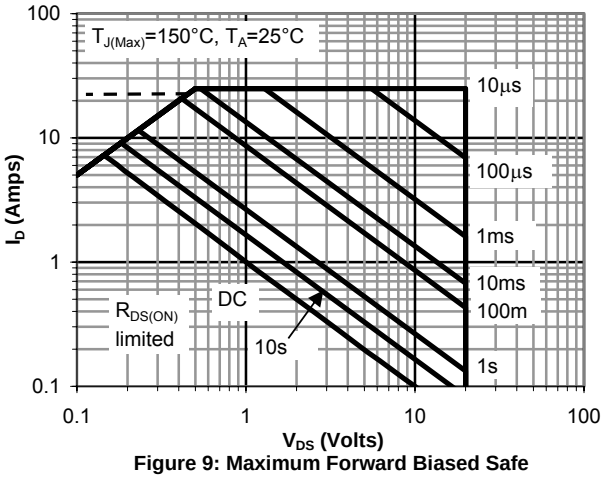


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

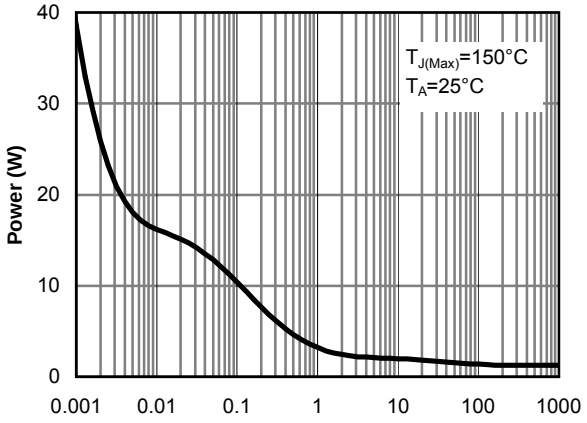


Figure 10: Single Pulse Power Rating Junction-to-

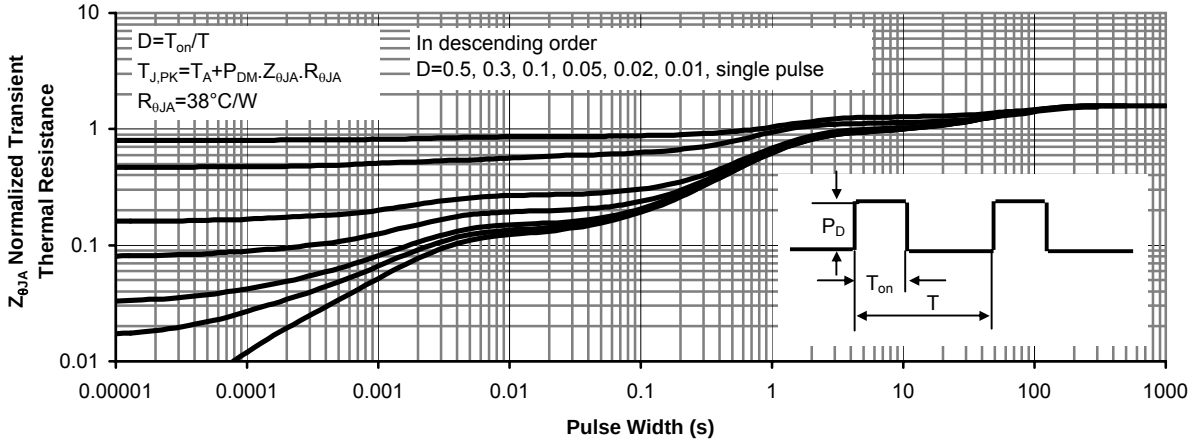
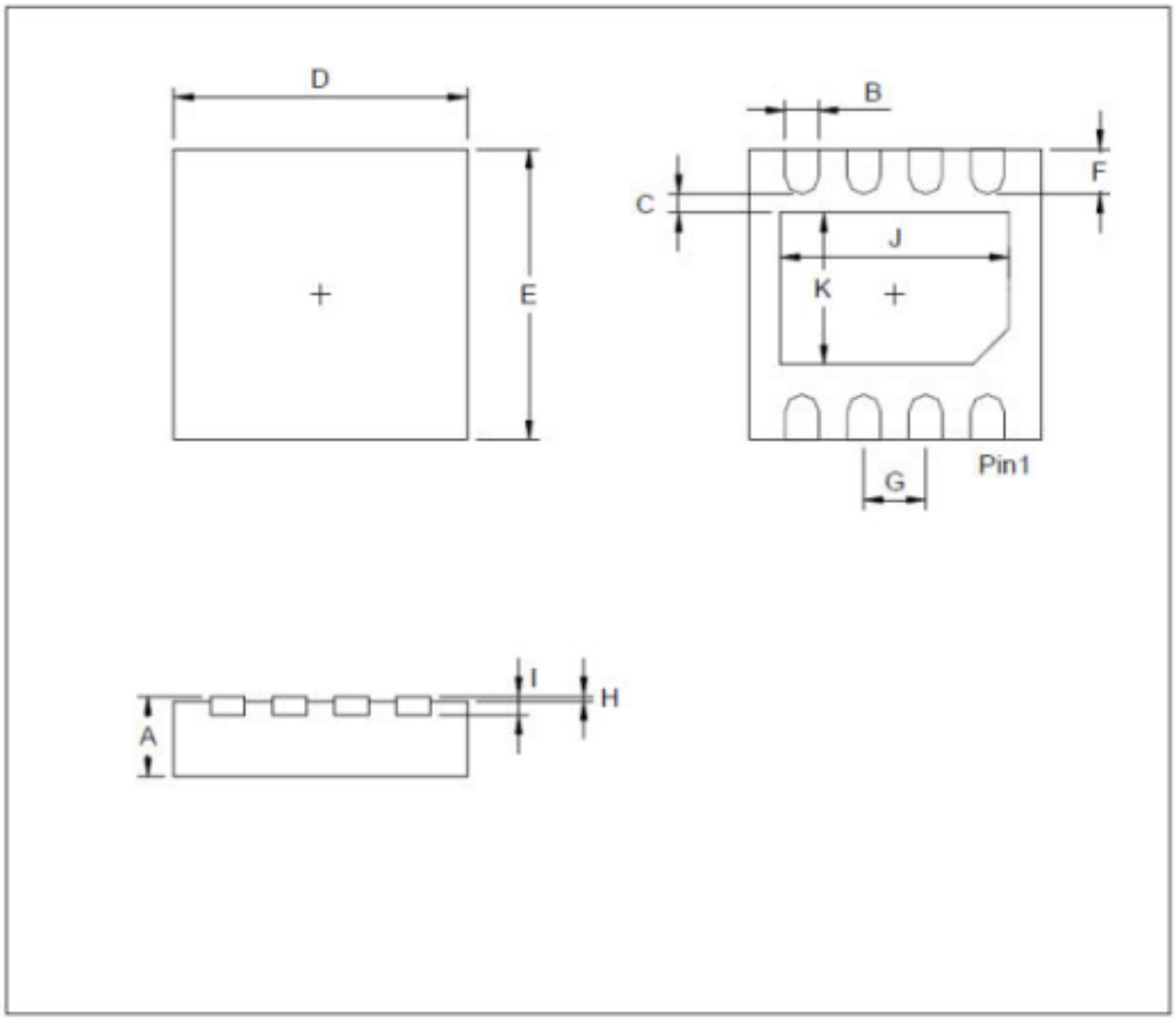


Figure 11: Normalized Maximum Transient Thermal Impedance

DFN3030-8L Package Outline Data



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				