TMN3060DF

N-Channel Enhancement Mosfet

General Description

• Low R $_{DS(ON)}$
• RoHS and Halogen-Free Compliant

Applications

• Load switch
• PWM

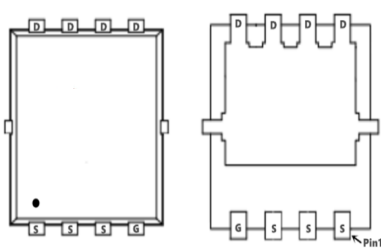### General Features

V_{DS} = 30V I_D =60A
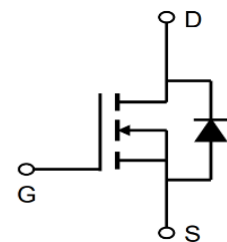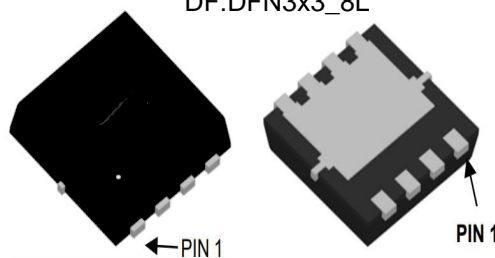
$R_{DS(ON)} = 4.7m\Omega\,(typ.)\,@\,V_{GS}$=10V

100% UIS Tested
100% R_g Tested

Green Product

DF:DFN3x3_8L

Marking: 60N03

Absolute Maximum Ratings (T$_A$ = 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V$_{DS}$	Drain-Source Voltage	30	V
V$_{GS}$	Gate-Source Voltage	±20	V
I$_D$@T$_C$=25°C	Continuous Drain Current, V$_{GS}$ @ 10V[1]	60	A
I$_D$@T$_C$=100°C	Continuous Drain Current, V$_{GS}$ @ 10V[1]	30	A
I$_{DM}$	Pulsed Drain Current[2]	160	A
EAS	Single Pulse Avalanche Energy[3]	58	mJ
I$_{AS}$	Avalanche Current	60	A
P$_D$@T$_C$=25°C	Total Power Dissipation[4]	25	W
T$_{STG}$	Storage Temperature Range	-55 to 150	°C
T$_J$	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R$_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	62	°C/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=20A	---	4.7	6.0	mΩ
		V_{GS}=4.5V , I_D=10A	---	6.5	9	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D =250uA	1.2	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=30A	---	43	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=15A	---	34	---	nC
Q_{gs}	Gate-Source Charge		---	6	---	
Q_{gd}	Gate-Drain Charge		---	9	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=3.3Ω I_D=15A	---	8.5	---	ns
T_r	Rise Time		---	103	---	
$T_{d(off)}$	Turn-Off Delay Time		---	37.3	---	
T_f	Fall Time		---	105	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	1600	---	pF
C_{oss}	Output Capacitance		---	245	---	
C_{rss}	Reverse Transfer Capacitance		---	215	---	

Diode Characteristics

| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,6]	V_G=V_D=0V , Force Current	---	---	60	A
I_{SM}	Pulsed Source Current[2,6]		---	---	140	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V

Note :
1.The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=48A
4.The power dissipation is limited by 150℃ 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.
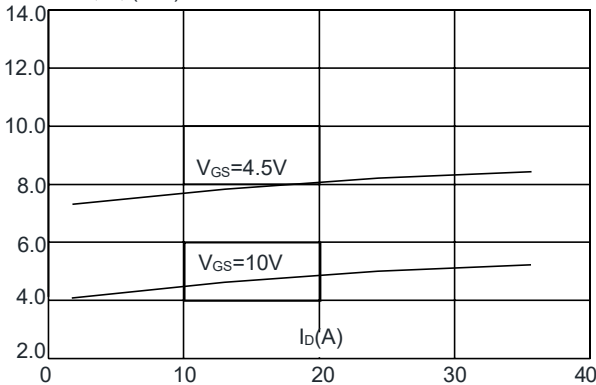
Typical Performance Characteristics
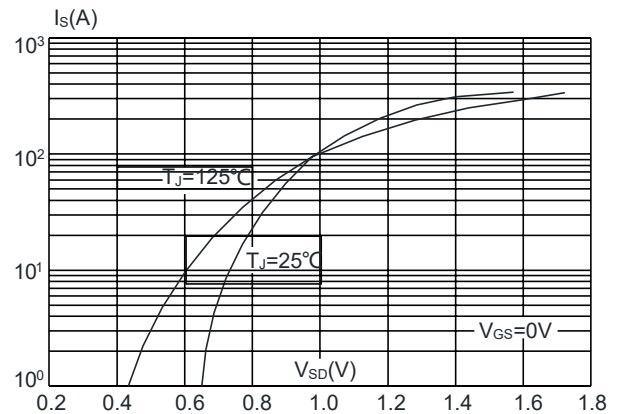
Figure1: Output Characteristics

I_D (A)
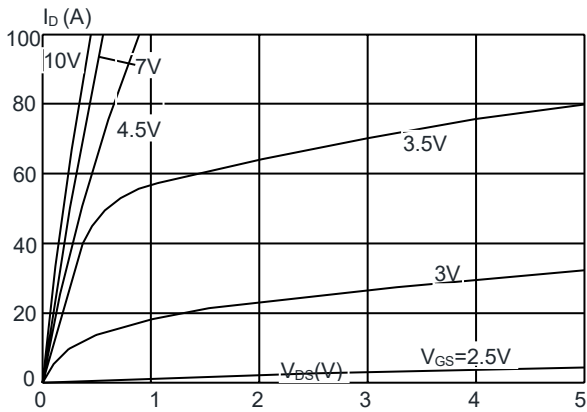
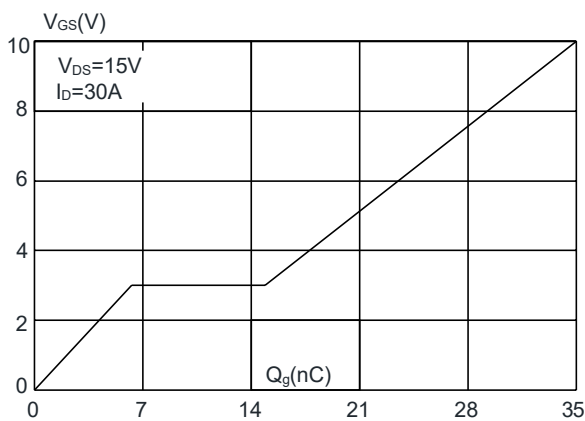**Figure 2:** Typical Transfer Characteristics

I_D (A)
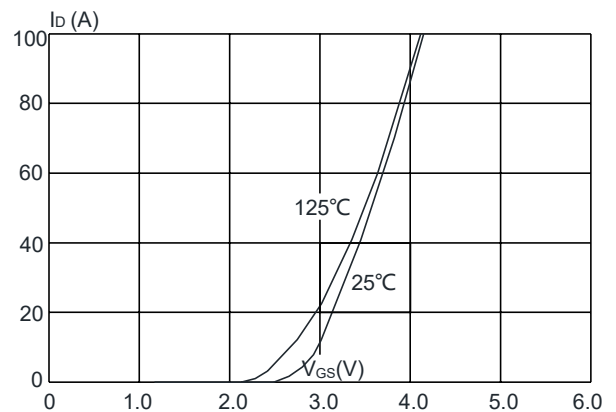
Figure 3: On-resistance vs. Drain Current

$R_{DS(ON)}$ (mΩ)

Figure 4: Body Diode Characteristics

I_S(A)

Figure 5: Gate Charge Characteristics

V_{GS}(V)

Figure 6: Capacitance Characteristics

C(pF)
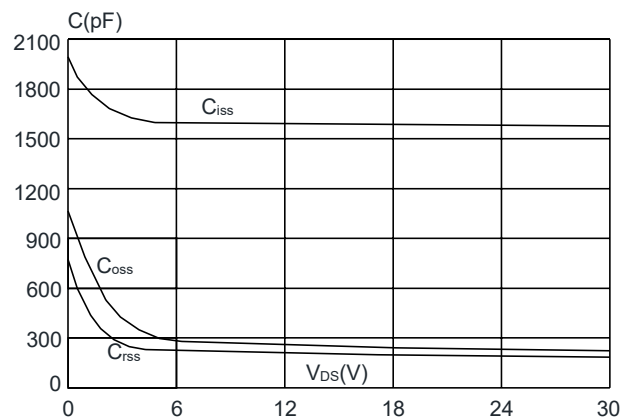
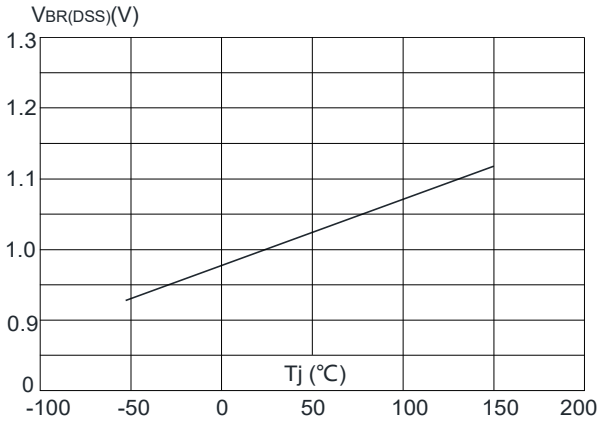**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

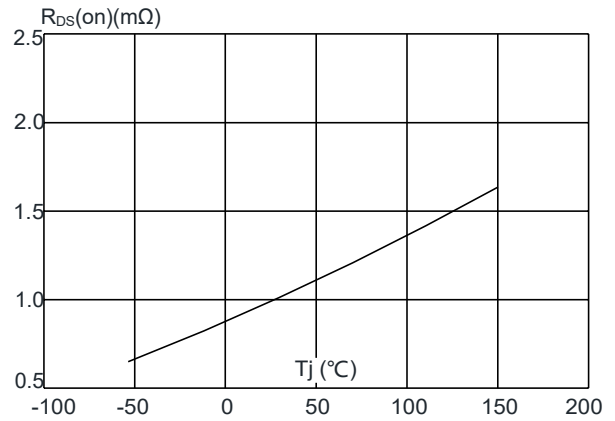**Figure 8:** Normalized on Resistance vs. Junction Temperature

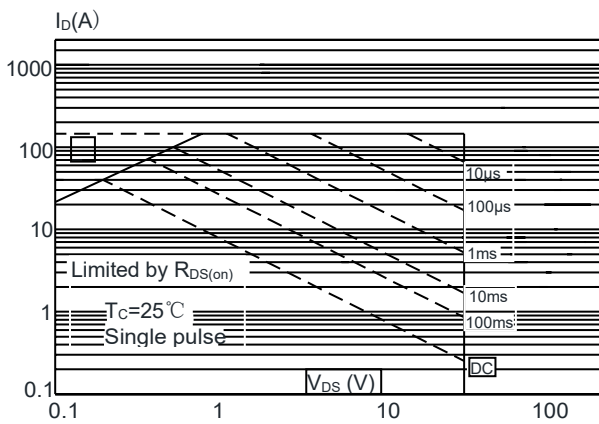**Figure 9:** Maximum Safe Operating Area

Figure 10: Maximum Continuous Drain Current vs. Case Temperature
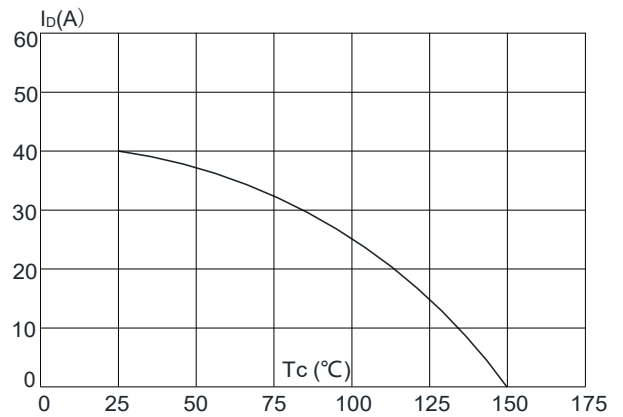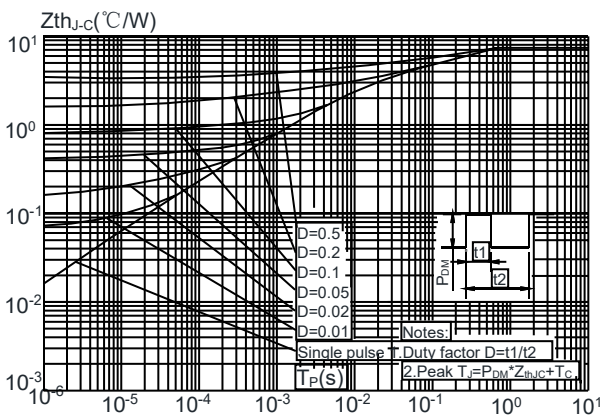

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case
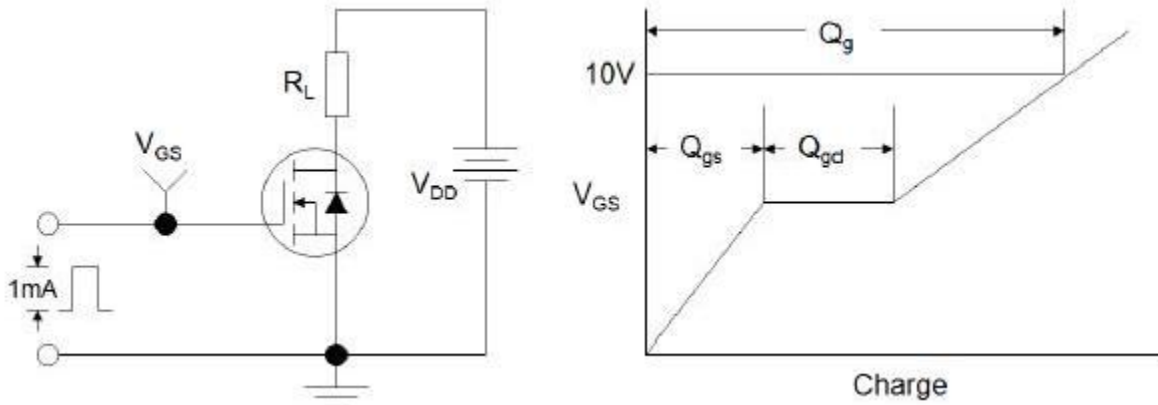
Test Circuit

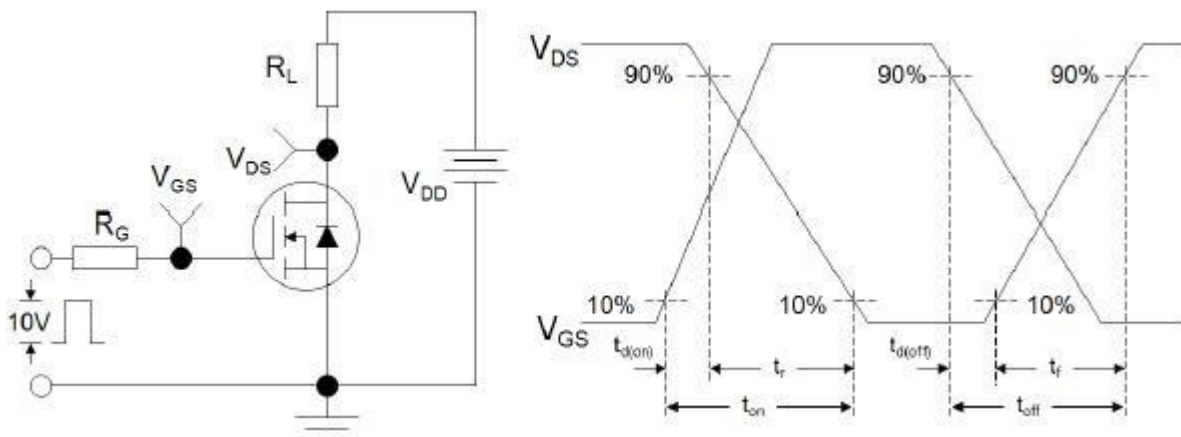**Figure1:Gate Charge Test Circuit & Waveform**

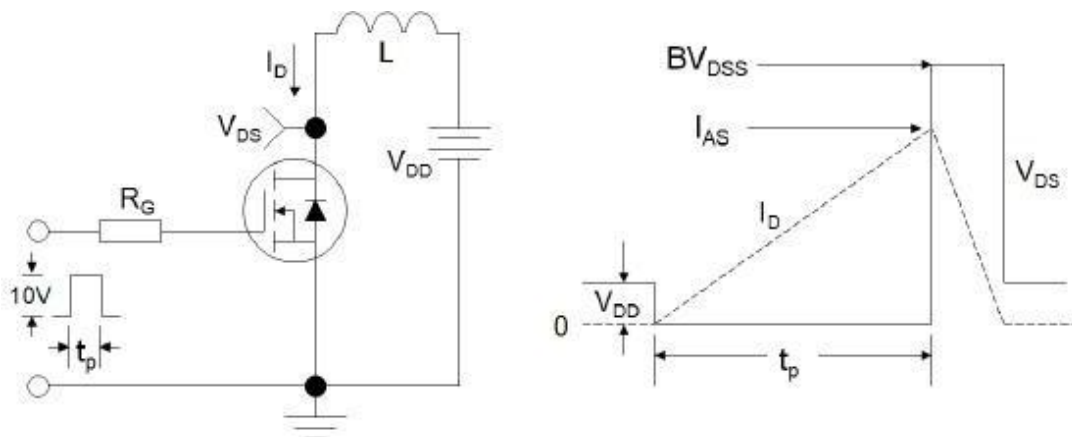**Figure 2: Resistive Switching Test Circuit & Waveforms**

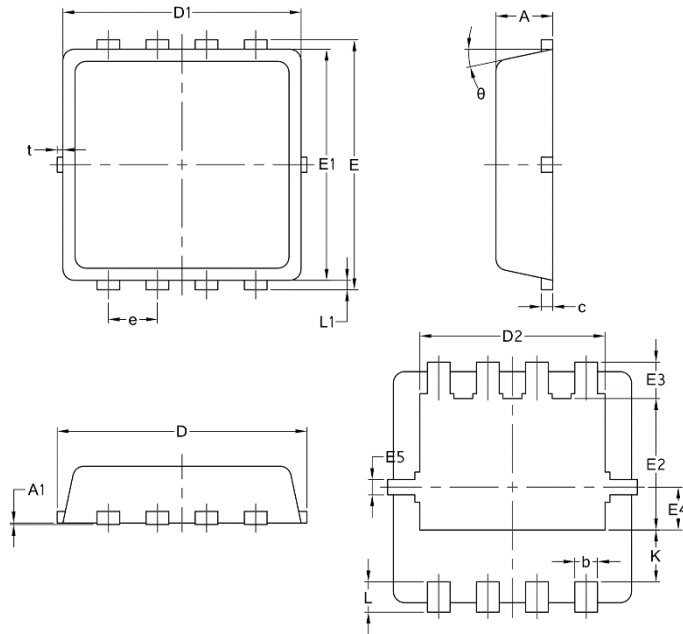**Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms**

Package Mechanical Data:DFN3x3–8L

Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET *category:*

Click to view products by Tritech-MOS *manufacturer:*

Other Similar products are found below :

IRFD120 JANTX2N5237 BUK455-60A/B MIC4420CM-TR VN1206L NDP4060 SI4482DY IPS70R2K0CEAKMA1 SQD23N06-31L-GE3 TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 DMN1053UCP4-7 SQJ469EP-T1-GE3 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 DMN2990UFB-7B IPB80P04P405ATMA2 2N7002W-G MCAC30N06Y-TP MCQ7328-TP BXP7N65D BXP4N65F AOL1454G WMJ80N60C4 BXP2N20L BXP2N65D BXT1150N10J BXT1700P06M TSM60NB380CP ROG RQ7L055BGTCR DMNH15H110SK3-13 SLF10N65ABV2 BSO203SP BSO211P IPA60R230P6 IPA60R460CE