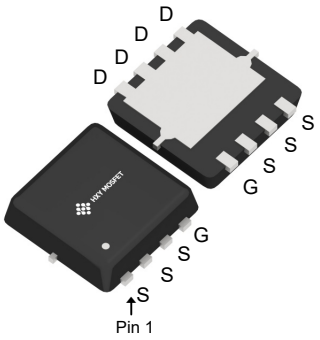
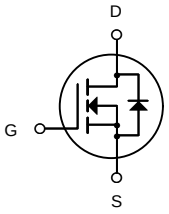
Description

The DMT3003LFGQ-7 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.



DFN3X3-8L



N-Channel MOSFET

General Features

V_{DS} = 30V I_D = 100A

$R_{DS(ON)}$ < 3mΩ @ V_{GS}=10V

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMT3003LFGQ-7	DFN3X3-8L	HXY MOSFET	5000

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	30	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	100	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	60	A
IDM	Pulsed Drain Current[1]	320	A
EAS	Single Pulse Avalanche Energy[2]	156	mJ
P_D	Total Power Dissipation	31.7	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JC$	Thermal Resistance Junction-Case	3.94	℃/W

Electrical Characteristics (T_J=25°Cunless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=10V,I_D=30A	---	2.5	3	mΩ
		V_{GS}=4.5V,I_D=20A	---	4.3	5.5	
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	3499	---	pF
C_{oss}	Output Capacitance		---	499	--	
C_{rss}	Reverse Transfer Capacitance		---	430	---	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=15V, I_D=30A, R_G=3Ω,V_{GS}=10V	---	12	---	ns
t_r	Rise Time		---	119	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	59	---	ns
t_f	Fall Time		---	109	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=30A	---	69	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	17	---	nC
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=30A	---	---	1.2	V
I_S	Continuous Drain Curren	VD=VG=0V	---	---	100	A
I_{SM}	Pulsed Drain Current		---	---	320	A
Trr	Reverse Recovery Time	I_F=20A,T_J=25°C dI/dt=100A/us	---	21	---	NS
Qrr	Reverse Recovery Charge		---	9	---	NC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=25A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

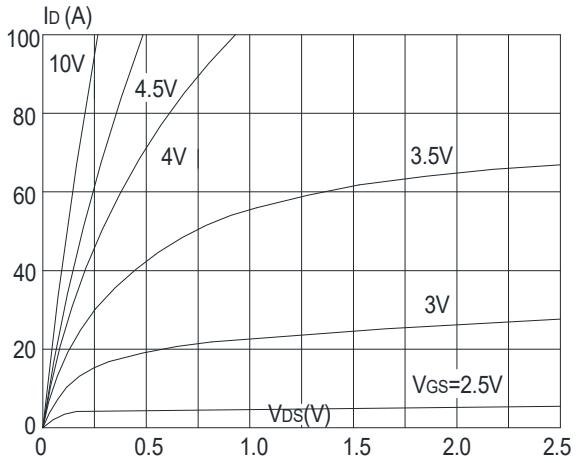


Figure1: Output Characteristics

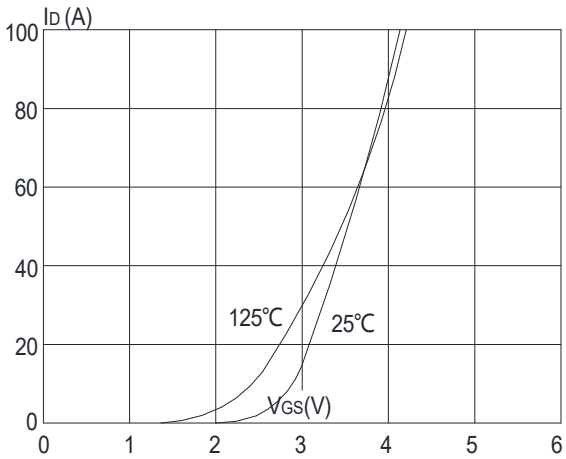


Figure 2: Typical Transfer Characteristics

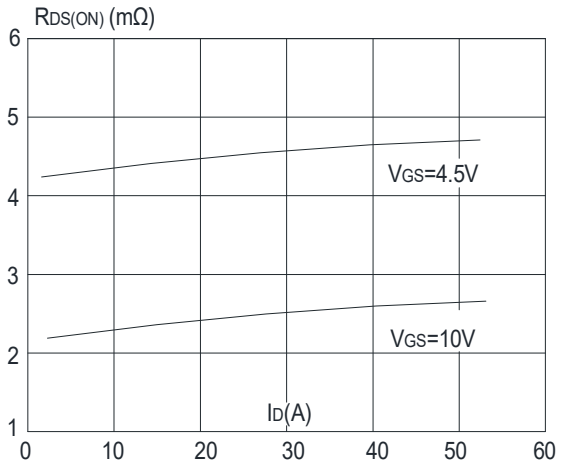


Figure 3: On-resistance vs. Drain Current

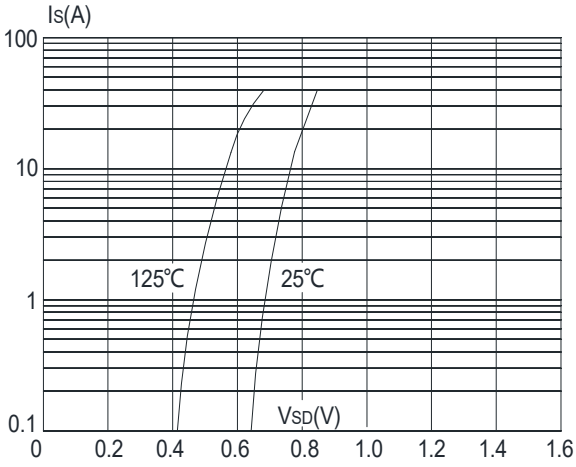


Figure 4: Body Diode Characteristics

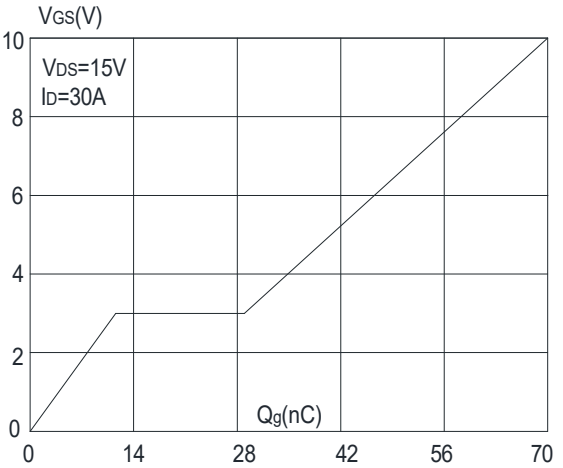


Figure 5: Gate Charge Characteristics

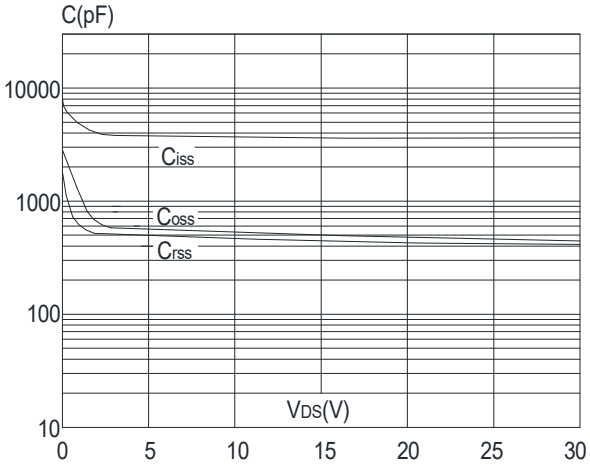


Figure 6: Capacitance Characteristics

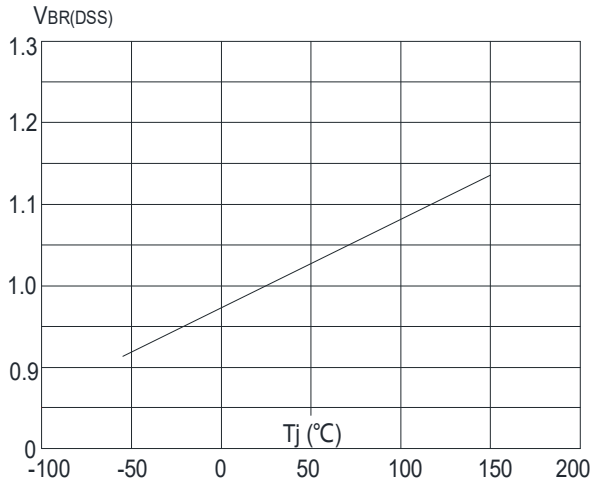


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

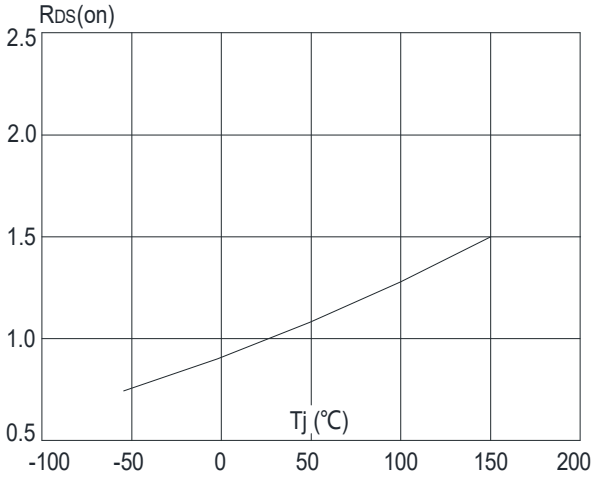


Figure 8: Normalized on Resistance vs. Junction Temperature

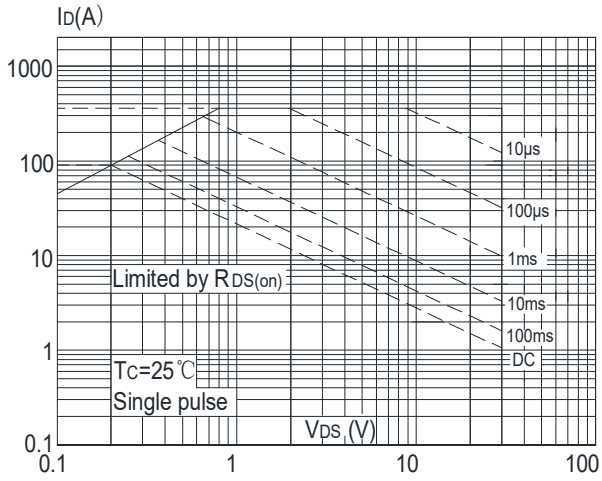


Figure 9: Maximum Safe Operating Area

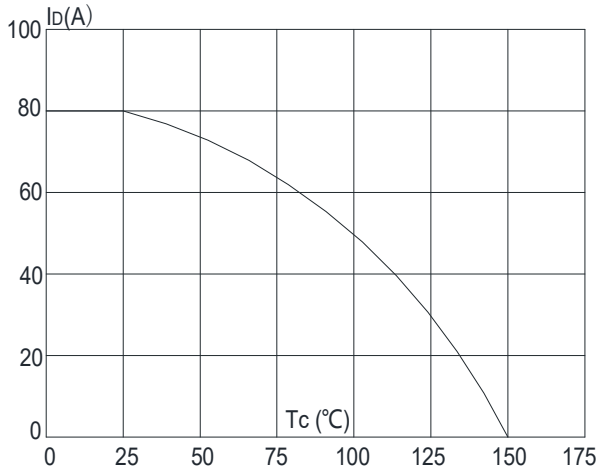


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

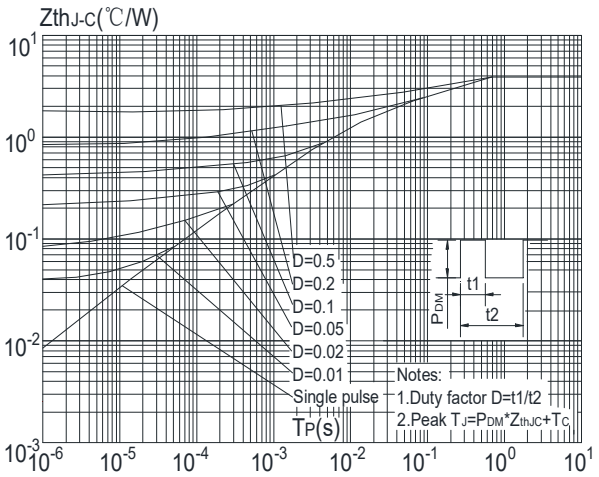
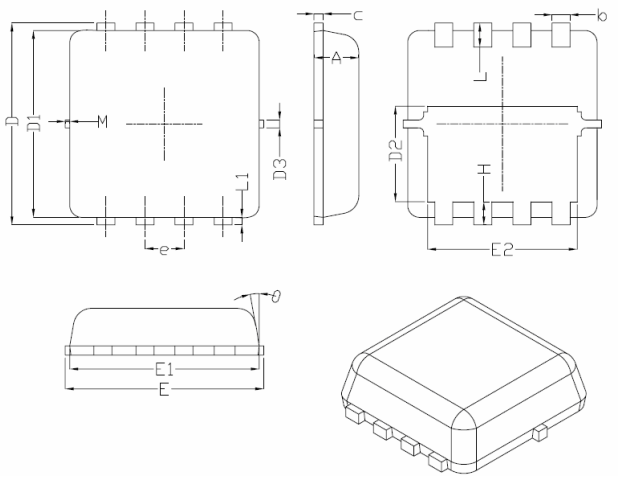


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

DFN3X3-8L Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°

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