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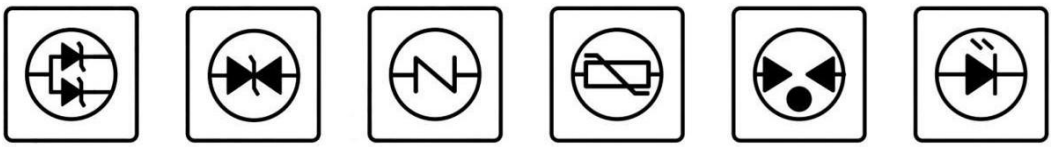
SEMICONDUCTOR



NTTFS015N04C-MS

Product specification

Description

The NTTFS015N04C-MSuses advanced trench technology to provide excellent RDS(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.

Features

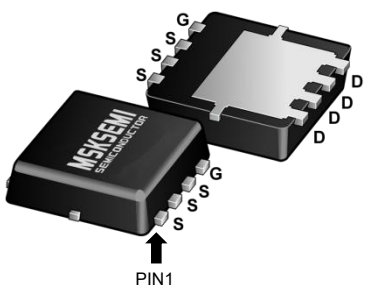
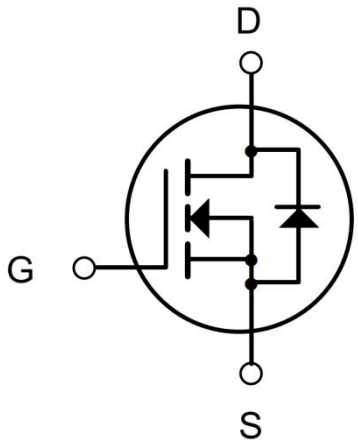
V_{DS} = 40V I_D =50A

$R_{DS(ON)}$ < 14mΩ V_{GS}=10V

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

PACKAGE OUTLINE	N-Channel MOSFET	Marking
 DFN5X6-8L		

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	40	V
V_{GS}	Gate- Source Voltage	±20	V
I_D @T_C=25℃	Continuous Drain Current, V_{GS} @ 10V [1]	50	A
I_D @T_C=100℃	Continuous Drain Current, V_{GS} @ 10V [1]	38	A
I_{DM}	Pulsed Drain Current[2]	160	A
EAS	Single Pulse Avalanche Energy[3]	50	mJ
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case(Note 2)	$R_{\theta JC}$	1.76	℃/W

Electrical Characteristics (TA=25℃unless otherwise noted)

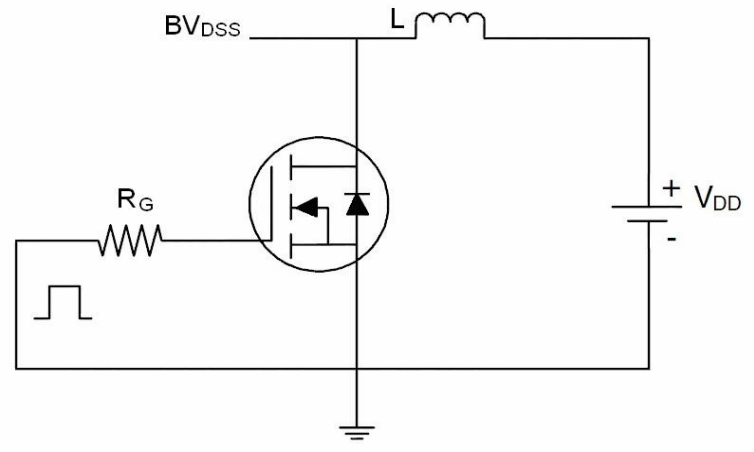
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS} = 0V,	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS} = ±20V	-	-	±100	μA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	V_{GS}=10V, I_D=30A	-	11	14	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=20A	30	-	-	S
Dynamic Characteristics(Note 4)						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	1540	-	pF
C_{oss}	Output Capacitance		-	171	-	pF
C_{rss}	Reverse Transfer Capacitance		-	115	-	pF
Switching Characteristics(Note 4)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=20V, I_D=20A,$R_{L=1\Omega}$ V_{GS}=10V, R_{GEN}=3Ω	-	5	-	ns
t_r	Turn-on Rise Time		-	24	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	38	-	ns
t_f	Turn-off Fall Time		-	12	-	ns
Q_g	Total Gate Charge	V_{DS}=30V, I_D=30A, V_{GS}=10V	-	24	-	nC
Q_{gs}	Gate-Source Charge		-	5.9	-	nC
Q_{gd}	Gate-Drain Charge		-	3.6	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Drain Forward Current(Note 2)		-	-	48	A
V_{SD}	Drain Forward Current(Note 3)	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Reverse Recovery Time	TJ=25℃, IF=30A di/dt=100A/μs(Note 3)	-	9	-	ns
Qrr	Reverse Recovery Charge		-	15	-	nC
ton	Forward Turn-On Time	Intrinsic turn-on time is negligible(turn-on is dominated br LS+LD				

Notes:

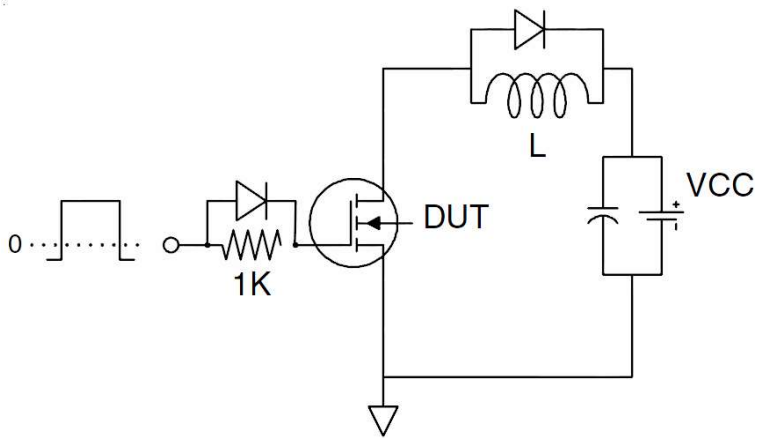
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t≤10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production
5. E_{AS} condition: Tj=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,Rg=25Ω

Test circuit

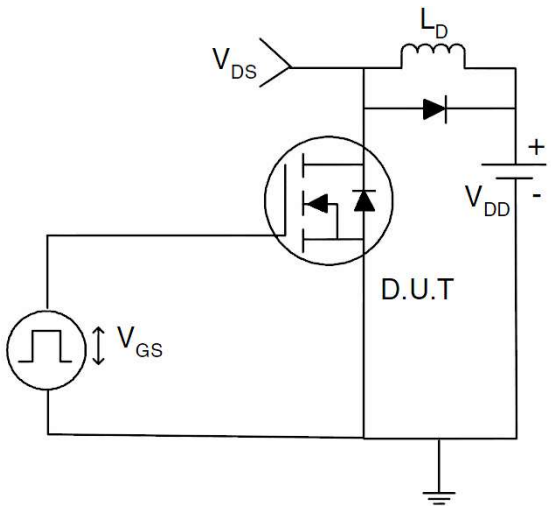
1) E_{AS} test Circuits



2) Gate charge test Circuit

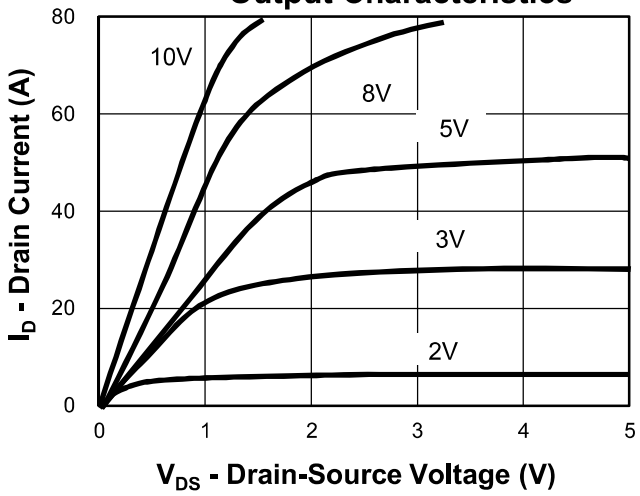


3) Switch Time Test Circuit

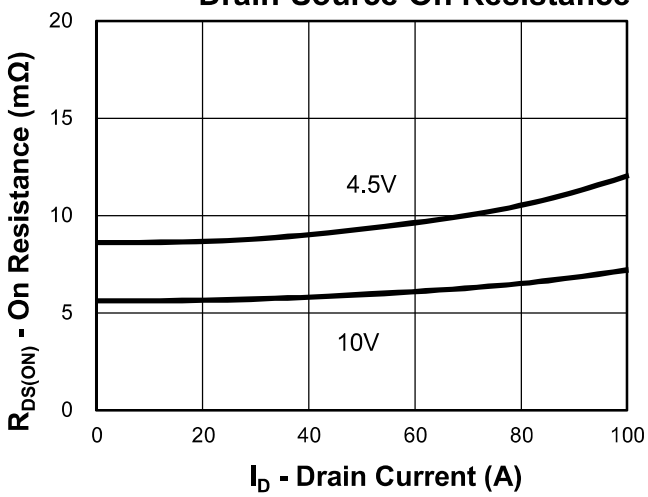


Typical Characteristics

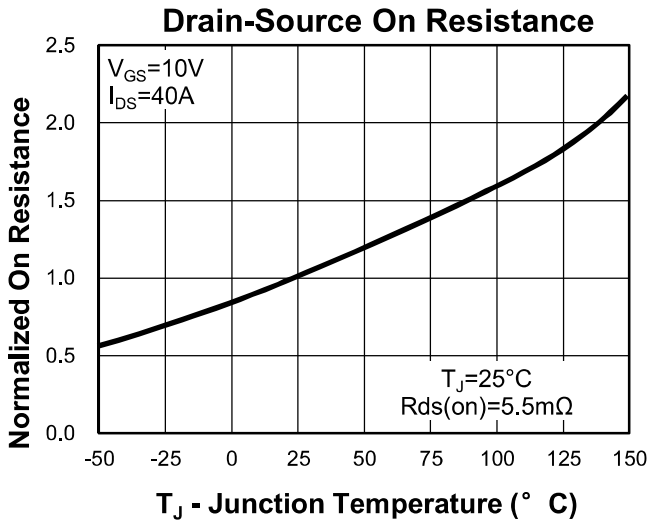
Output Characteristics



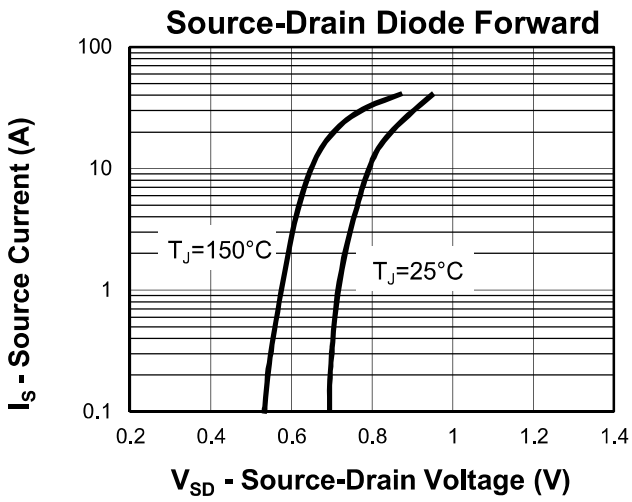
Drain-Source On Resistance



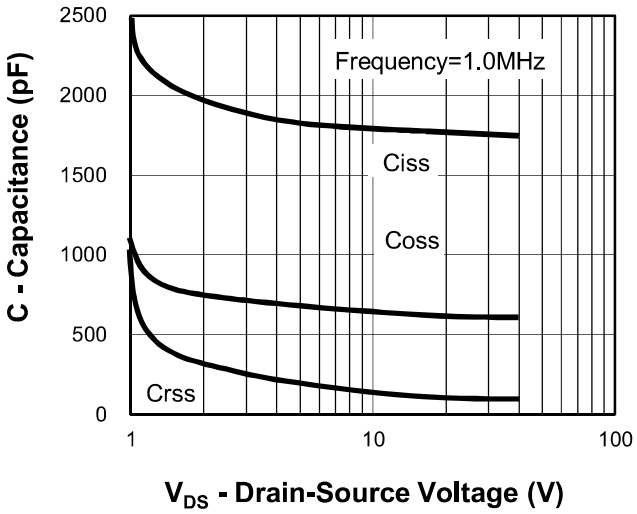
Drain-Source On Resistance



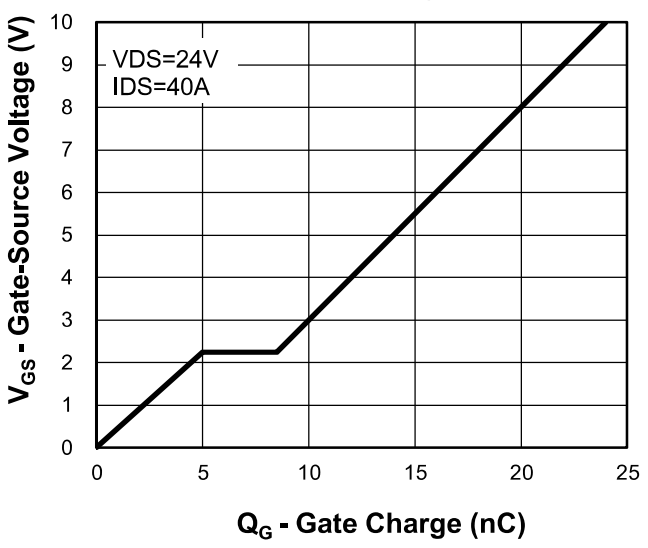
Source-Drain Diode Forward



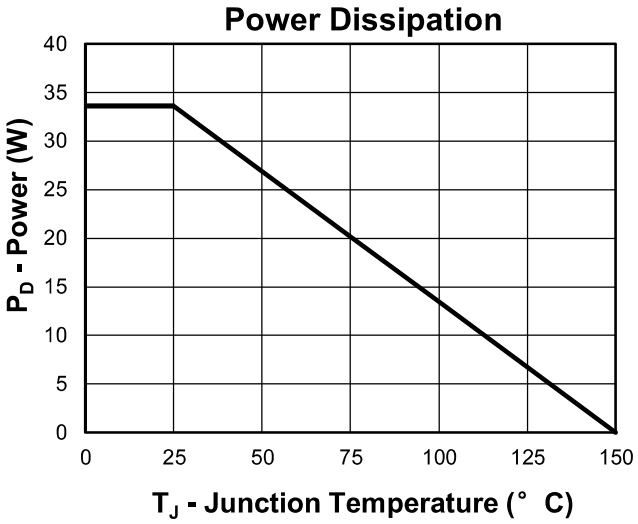
Capacitance

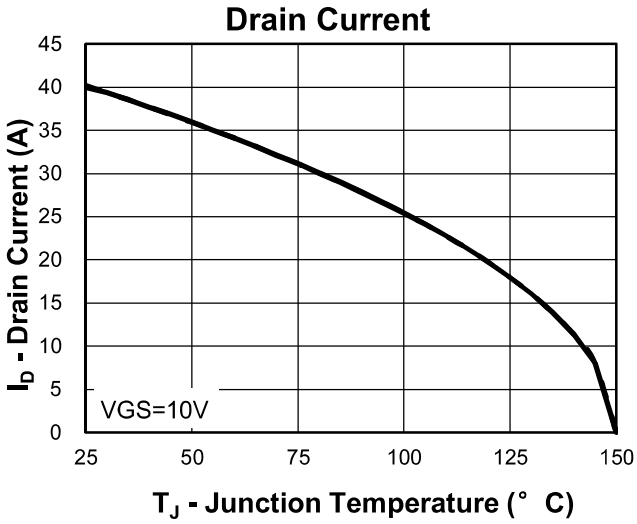


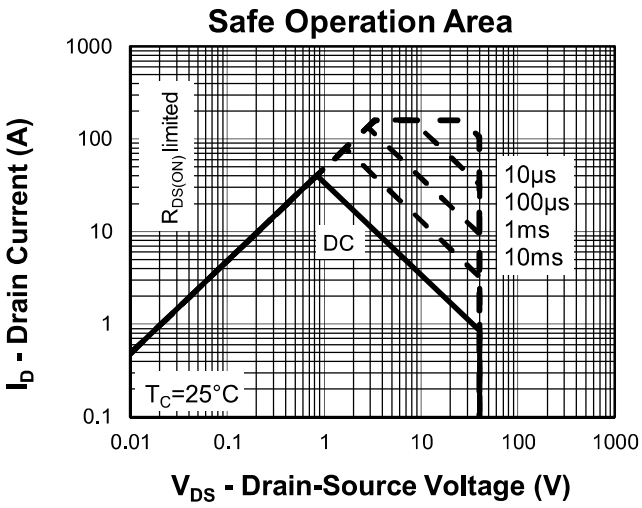
Gate Charge

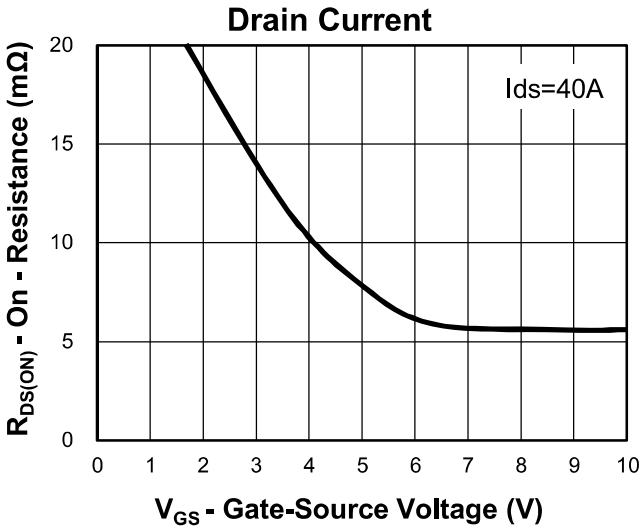


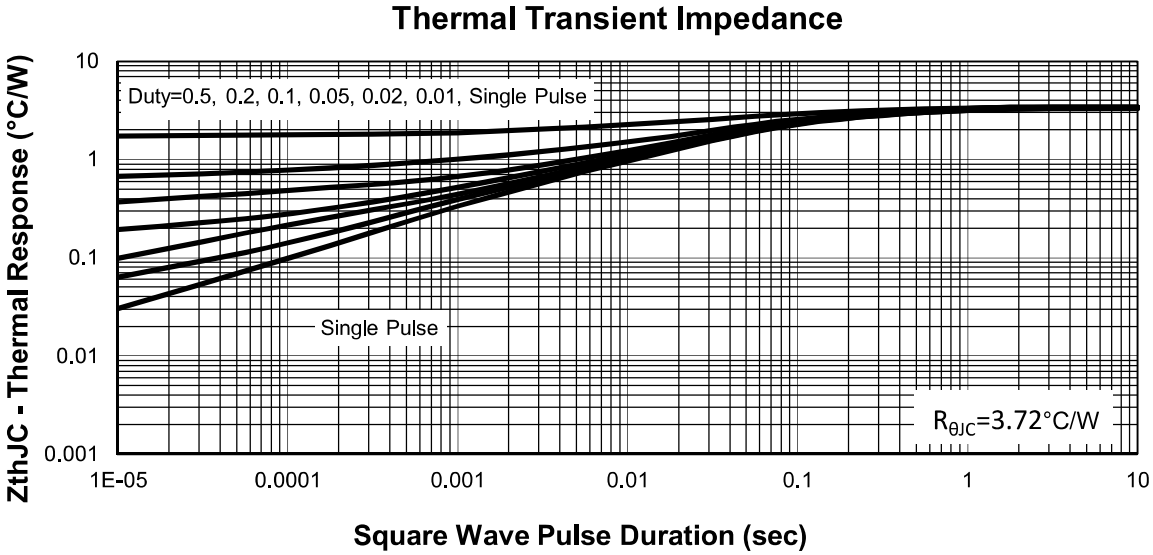
Typical Characteristics



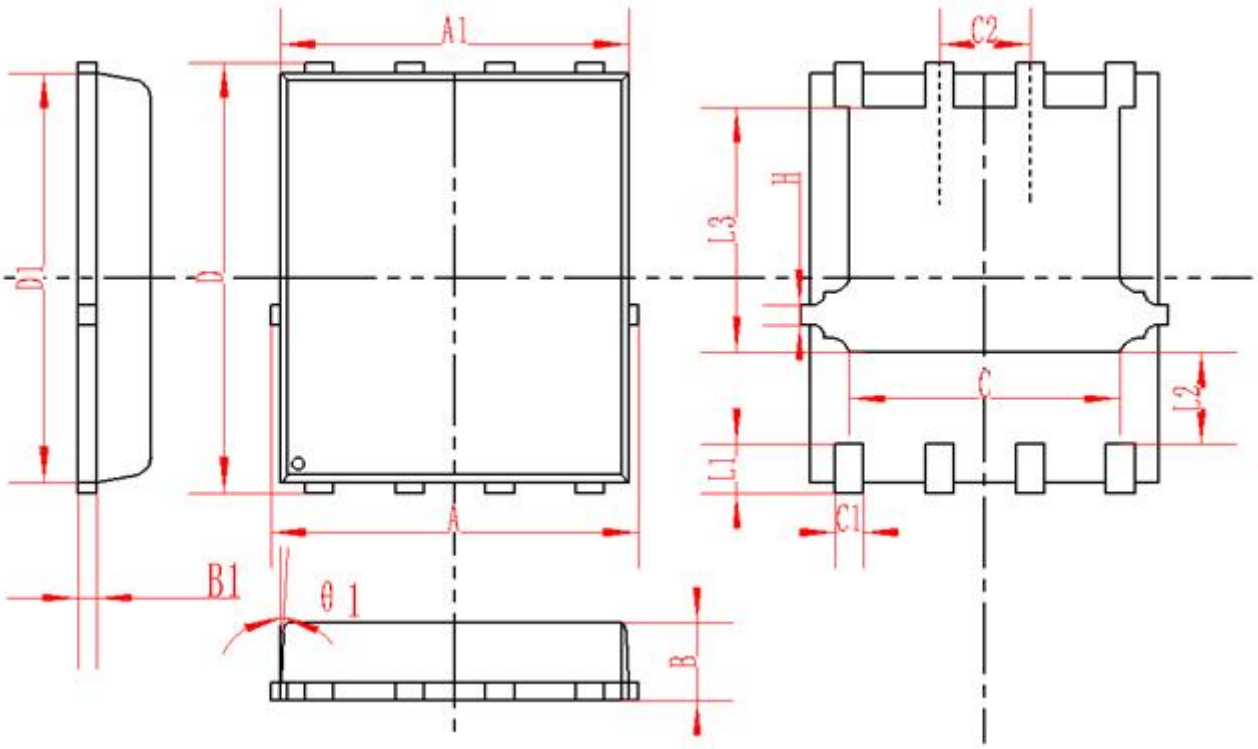








DFN5X6-8L Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
B1		0.254REF			0.010REF	
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2		1.27TYP			0.5TYP	
θ1	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010

REEL SPECIFICATION

P/N	PKG	QTY
NTTFS015N04C-MS	DFN5X6-8L	5000

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