UNIKC
Semiconductor

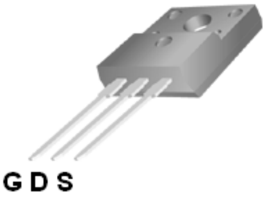
RoHS Compliant

P0860ETF / P0860ETFS

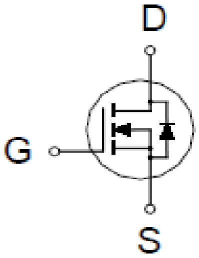
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
600V	1.05Ω @V_{GS} = 10V	8A



TO-220F
TO-220FS



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	
Continuous Drain Current[2]	T_C = 25 °C	I_D	8	A
	T_C = 100 °C		5	
Pulsed Drain Current[1]		I_{DM}	25	
Avalanche Current[3]		I_{AS}	3.5	
Avalanche Energy[3]		E_{AS}	61.2	mJ
Power Dissipation	T_C = 25 °C	P_D	36	W
	T_C = 100 °C		14	
Operating Junction & Storage Temperature Range		Tj, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.4	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1] Pulse width limited by maximum junction temperature.

[2] Ensure that the channel temperature does not exceed 150°C.

[3] V_{DD} = 50V, L = 10mH, starting T_J = 25°C

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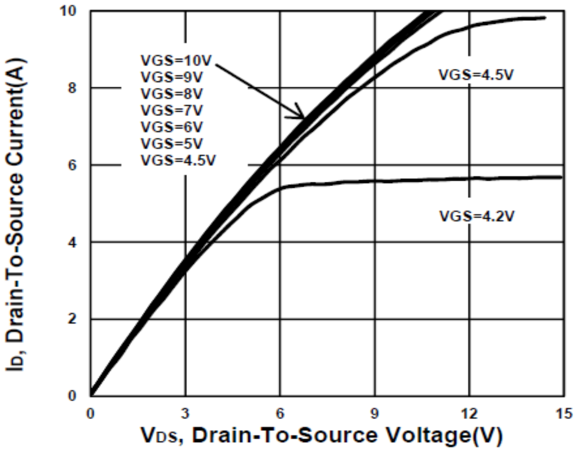
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250µA	600			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	2	2.7	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Gate Voltage Drain Current	I_{DSS}	V_{DS} = 600V, V_{GS} = 0V, T_C = 25 °C			1	µA
		V_{DS} = 480V, V_{GS} = 0V , T_C = 100 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 4A		0.83	1.05	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D =4A		10.5		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1270		pF
Output Capacitance	C_{oss}			114		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge[2]	Q_g	V_{DD} =480V, V_{GS} = 10V, I_D = 8A		29		nC
Gate-Source Charge[2]	Q_{gs}			5.1		
Gate-Drain Charge[2]	Q_{gd}			8.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 300V, I_D = 8A, R_G= 25Ω		23		nS
Rise Time[2]	t_r			31		
Turn-Off Delay Time[2]	$t_{d(off)}$			115		
Fall Time[2]	t_f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				8	A
Forward Voltage[1]	V_{SD}	I_F = 8A, V_{GS} = 0V			1	V
Reverse Recovery Time	t_{rr}	I_F = 8A, dI_F/dt = 100A / µS		390		nS
Reverse Recovery Charge	Q_{rr}			3.9		uC

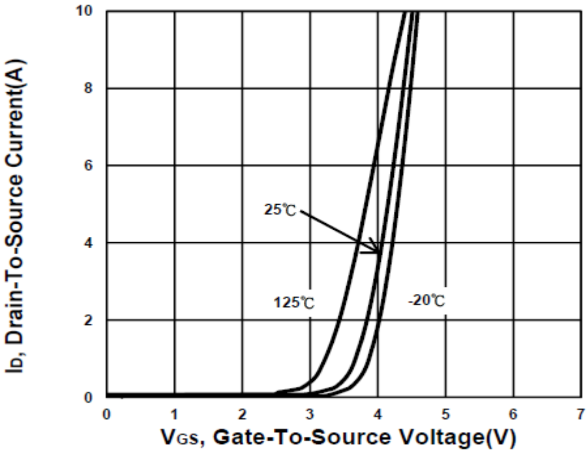
[1] Pulse test : Pulse Width ≤ 380 µsec, Duty Cycle ≤ 2%.

[2] Independent of operating temperature.

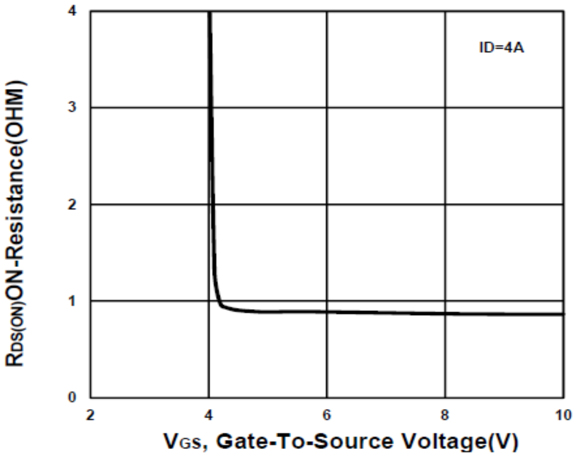
[3] Pulse width limited by maximum junction temperature.



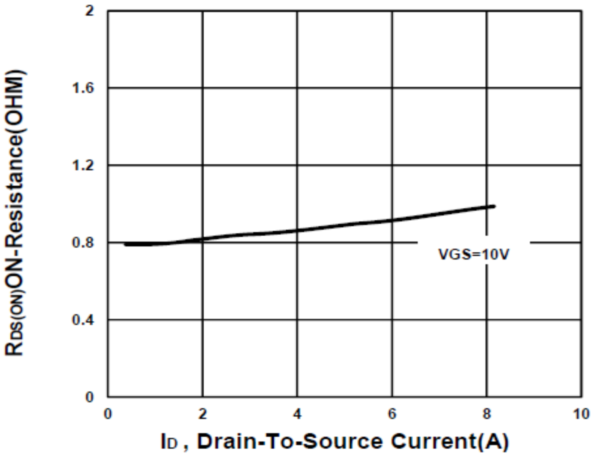
Output Characteristics



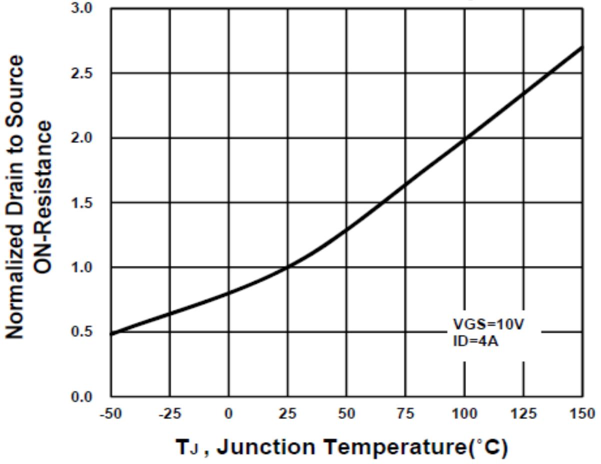
Transfer Characteristics



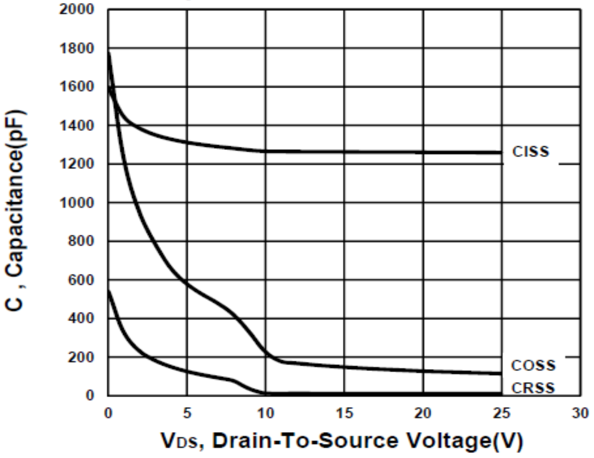
On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current

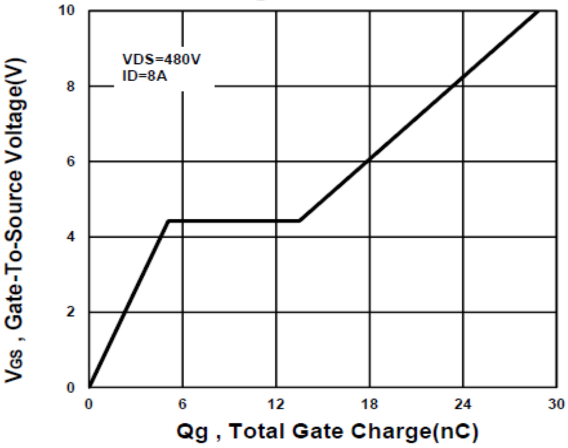


On-Resistance VS Temperature

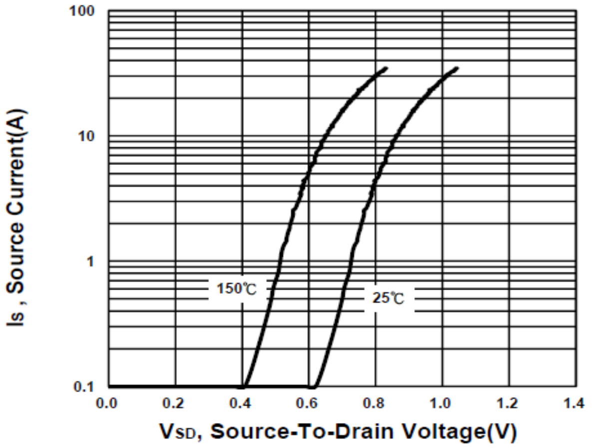


Capacitance Characteristic

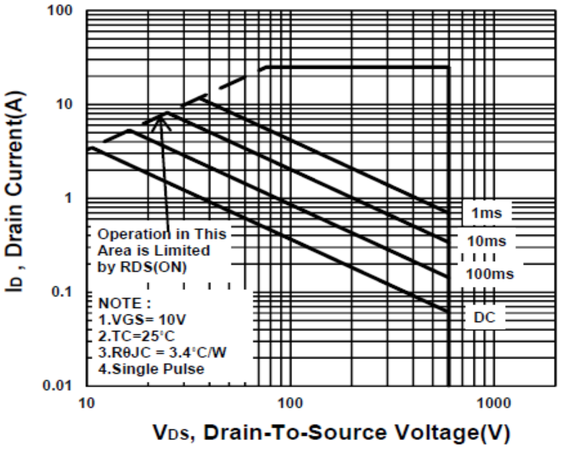
Gate charge Characteristics



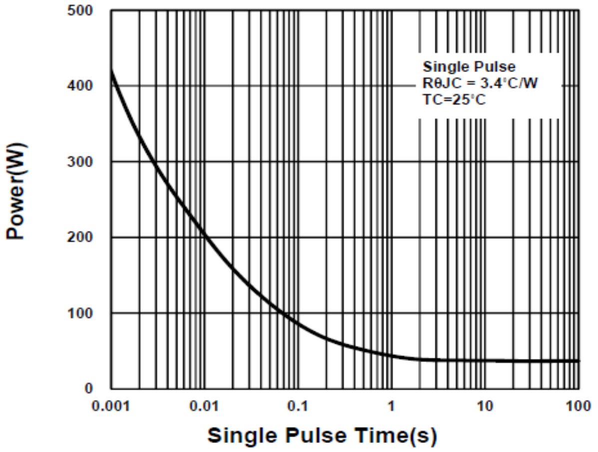
Source-Drain Diode Forward Voltage



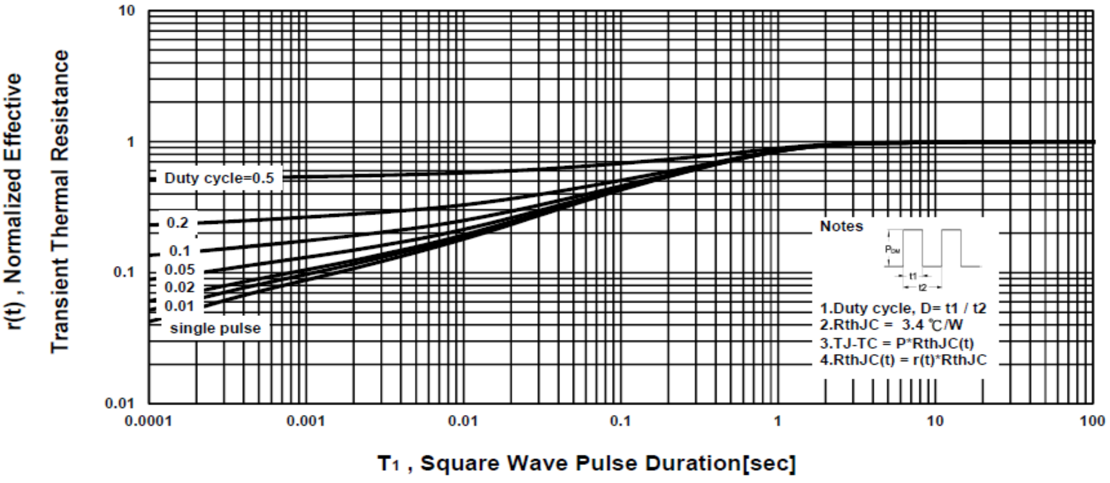
Safe Operating Area



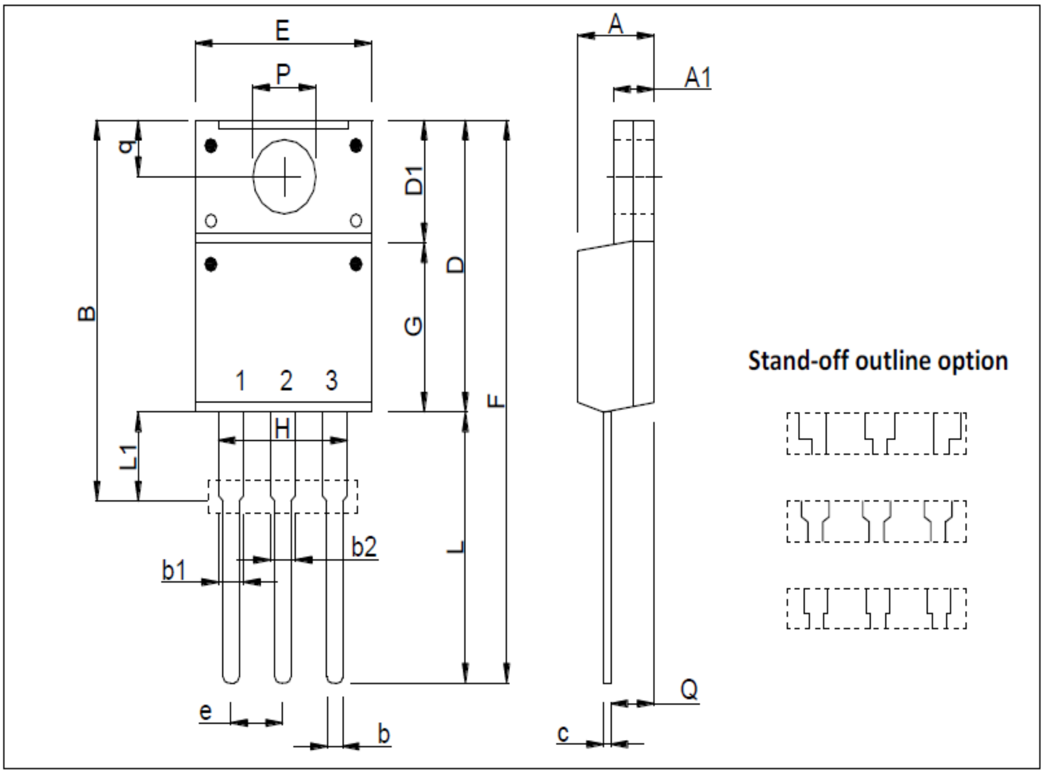
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.4		4.93	e	2.34		2.74
A1	2.34		3.1	F	27.2		30.6
B	18.8		20	G	7.7		9.39
b	0.65		1	H	6.18		6.82
b1	0.93		1.6	L	12.7		14.2
b2	0.95		1.6	L1	2.88		3.7
c	0.4		1	P	2.98		3.7
D	13.5		16.4	Q	2.3		2.96
D1	6.48		6.95	q	3.1		3.8
E	9.8		10.4				

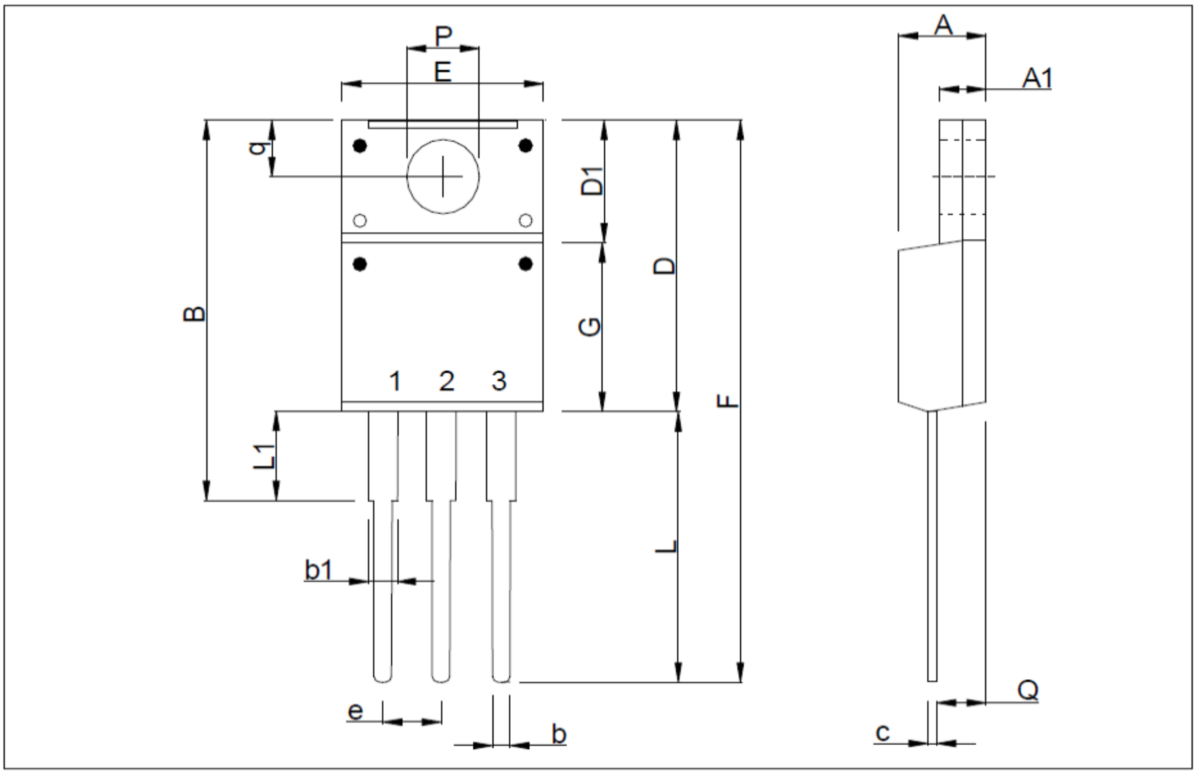


*因为各家封装模具不同而外观略有所差异，不影响电性及Layout。

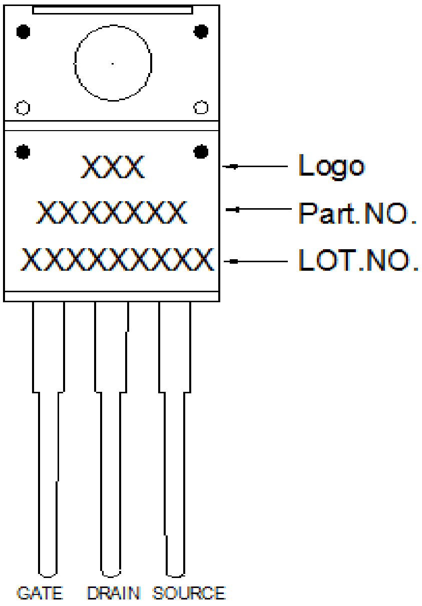
Package Dimension

TO-220FS (3-Lead) MECHANICAL DATA

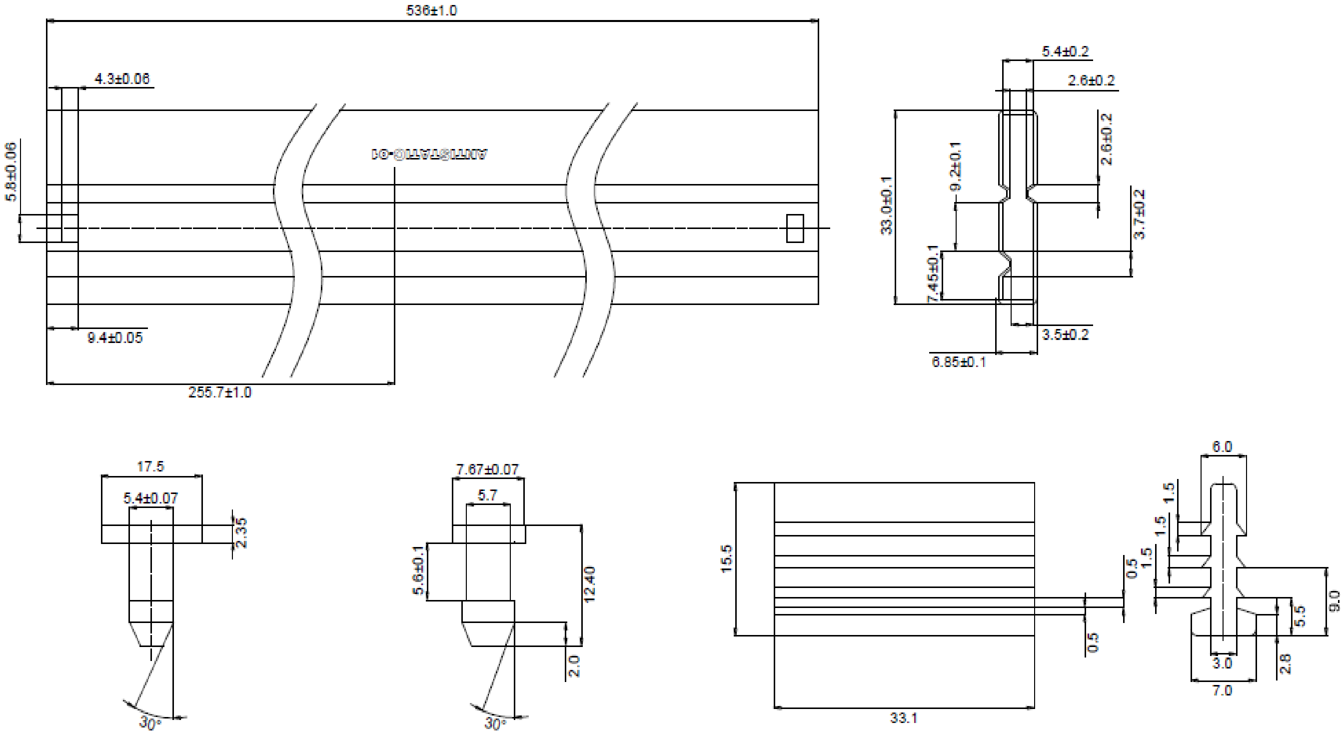
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2	4.7	4.93	e	2.05	2.54	3.05
A1	2.34	2.8	3.1	F	28.04		30.3
B	17.7		20.3	G	8.2	8.87	9.57
b	0.65	0.8	1.05	L	12.37		14.3
b1	0.9	1.3	1.5	L1	1.4	2.3	2.5
c	0.4	0.7	1.0	P	2.98	3.2	3.4
D	15.37		16.3	Q	2.1	2.6	2.96
D1	5.5		7.5	q	3.0	3.5	3.8
E	9.7	10.16	10.36				



A. Marking Information

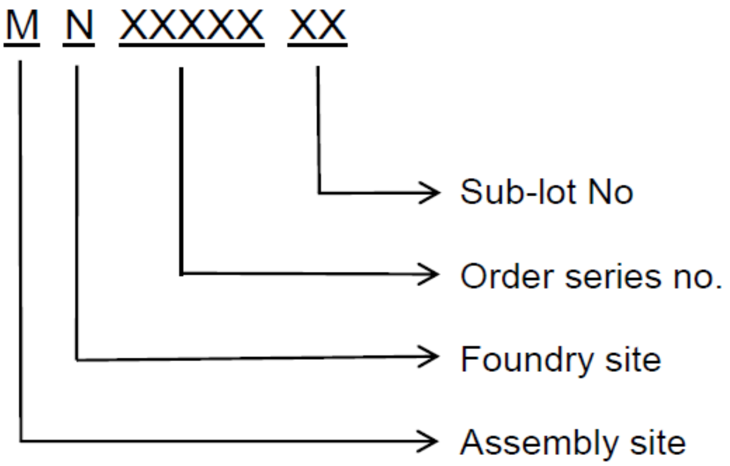


B. Tape&Reel Information:50pcs/Tube(2000pcs/Box)

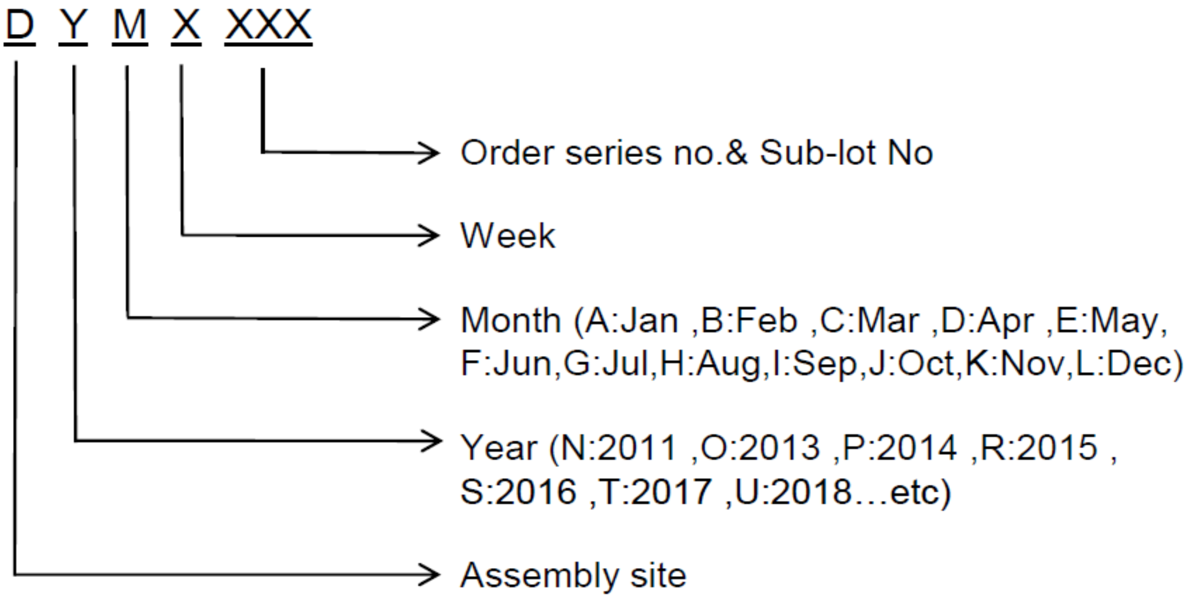


C. Lot No.&Date Code rule

1.Lot No.



2.Date Code



D.Label rule

标签内容(Label content)

1	Label Size	30 * 90 mm
2	Font style	Times New Roman or Arial （或可区分英文”O”和数字”0”，”G和”Q”的字型即可）
3	U-NIKC	Height: 4 mm
4	Package	Height: 2 mm
5	Date	Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12
6	Device	Height: 3 mm (Max: 16 Digit)
7	Lot	Height: 3 mm (Max: 9 Digit) Sub lot
8	D/C	Height: 3 mm (Max: 7 Digit)
9	QTY	Height: 3 mm (Max: 6 Digit) Thousand mark is no needed
10	RoHS label	RoHS long axis: 12 mm minor axis:6 mm bottom color: White Font color: Black Font style: Arial
11	Halogen Free label	G Diameter: 10 mm bottom color: Green Font color: Black Font style: Arial
12	Scan information	Device / Lot / D/C / QTY , Insert “ / “ between every parts. for example: P3055LDG/G12345601/GGG2301/2000 DPI (Dots per inch): Over 300 dpi Code : Code 128 Height: 6 mm at least