UNIKC
Semiconductor

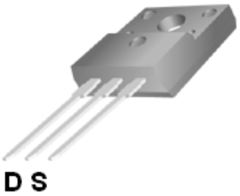
RoHS Compliant

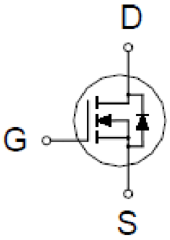
P0770ETF / P0770ETFS

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
700V	1.4Ω @V_{GS} = 10V	7A





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}	700	V
Gate-Source Voltage		V_{GS}	±30	
Continuous Drain Current[2]	T_C = 25 °C	I_D	7	A
	T_C = 100 °C		4	
Pulsed Drain Current[1]		I_{DM}	20	
Avalanche Current[3]		I_{AS}	2.2	
Avalanche Energy[3]		E_{AS}	24	mJ
Power Dissipation	T_C = 25 °C	P_D	43	W
	T_C = 100 °C		17	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.9	°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

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

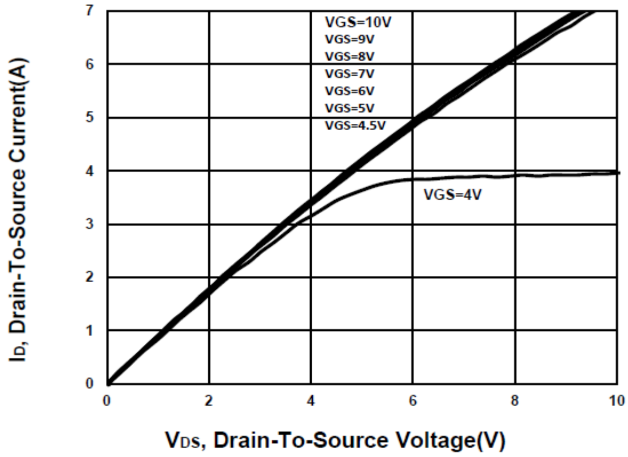
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	700			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.6	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Gate Voltage Drain Current	I_{DSS}	V_{DS} = 700V, V_{GS} = 0V, T_C = 25 °C			1	μA
		V_{DS} = 560V, V_{GS} = 0V , T_C = 100 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 3.5A		1.1	1.4	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 3.5A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1185		pF
Output Capacitance	C_{oss}			105		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge[2]	Q_g	V_{DD} =560V, V_{GS} = 10V, I_D = 7A		30		nC
Gate-Source Charge[2]	Q_{gs}			5		
Gate-Drain Charge[2]	Q_{gd}			9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 350V, I_D = 7A, R_G= 25Ω		35		nS
Rise Time[2]	t_r			75		
Turn-Off Delay Time[2]	$t_{d(off)}$			80		
Fall Time[2]	t_f			57		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				7	A
Forward Voltage[1]	V_{SD}	I_F = 7A, V_{GS} = 0V			1	V
Reverse Recovery Time	t_{rr}	I_F = 7A, dI_F/dt = 100A / μS		404		nS
Reverse Recovery Charge	Q_{rr}			3.8		uC

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

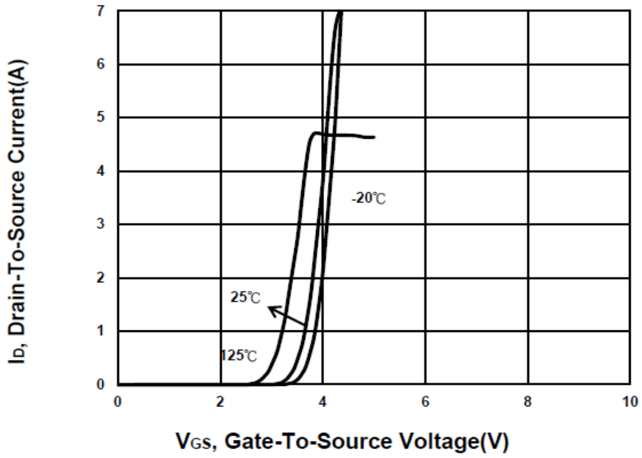
[2] Independent of operating temperature.

[3] Pulse width limited by maximum junction temperature.

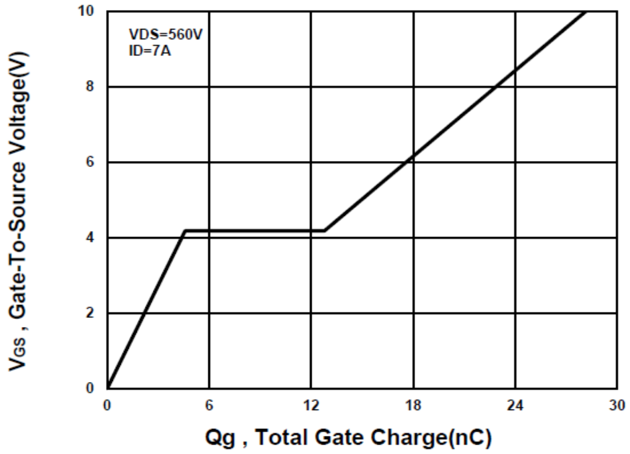
Output Characteristics



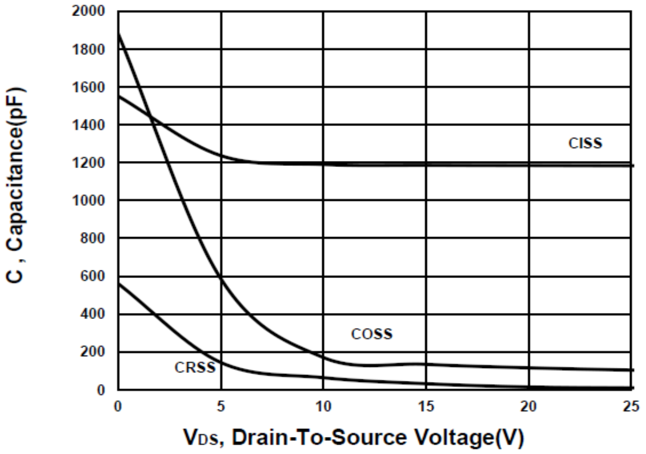
Transfer Characteristics



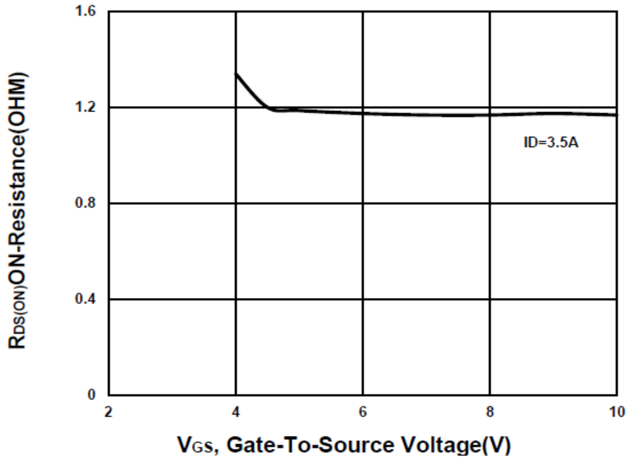
Gate charge Characteristics



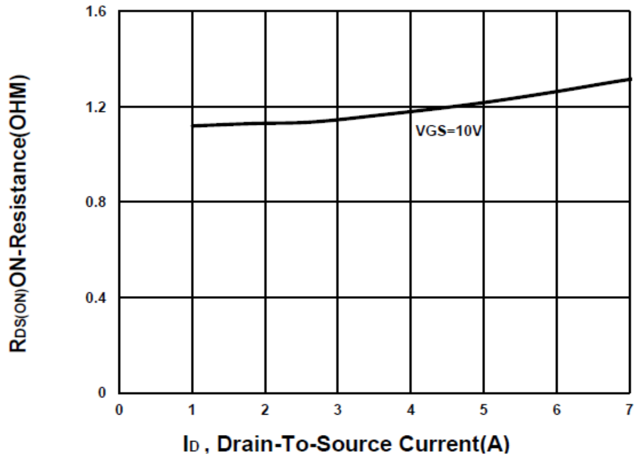
Capacitance Characteristic



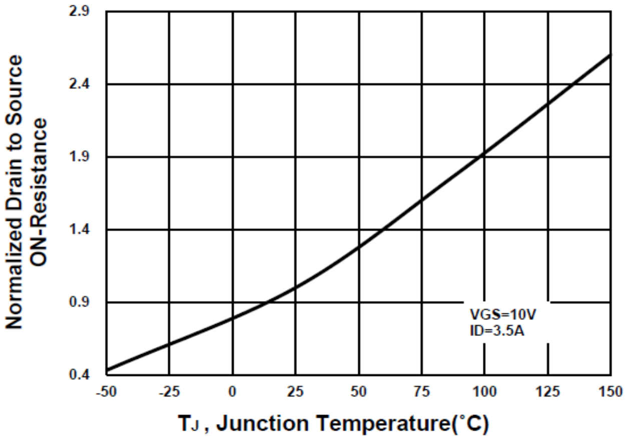
On-Resistance VS Gate-To-Source



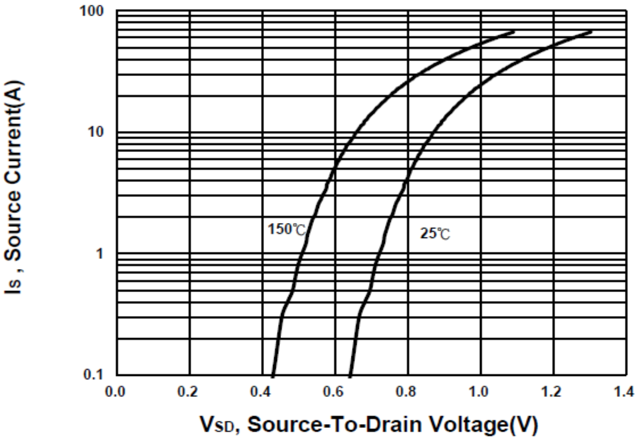
On-Resistance VS Drain Current



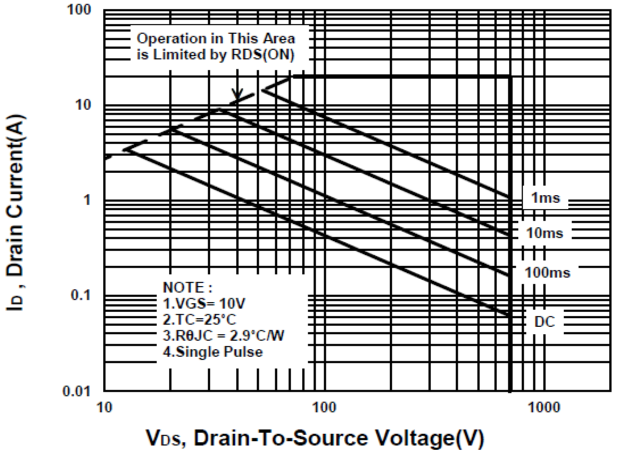
On-Resistance VS Temperature



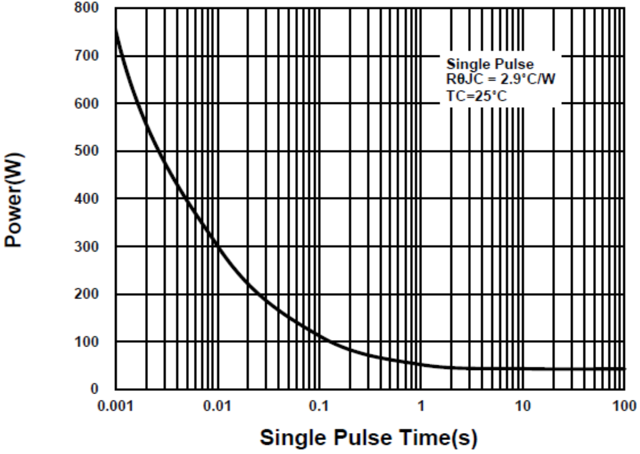
Source-Drain Diode Forward Voltage



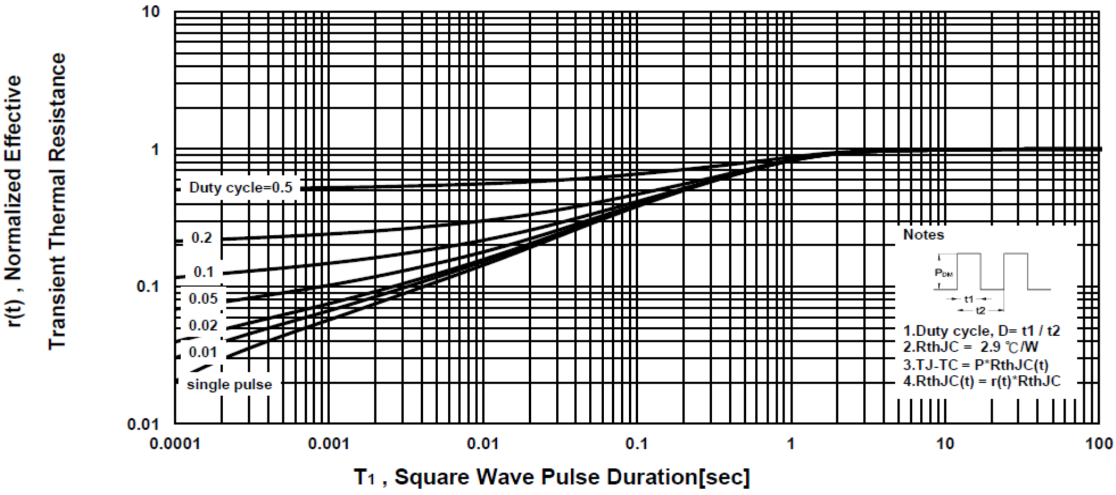
Safe Operating Area



Single Pulse Maximum Power Dissipation



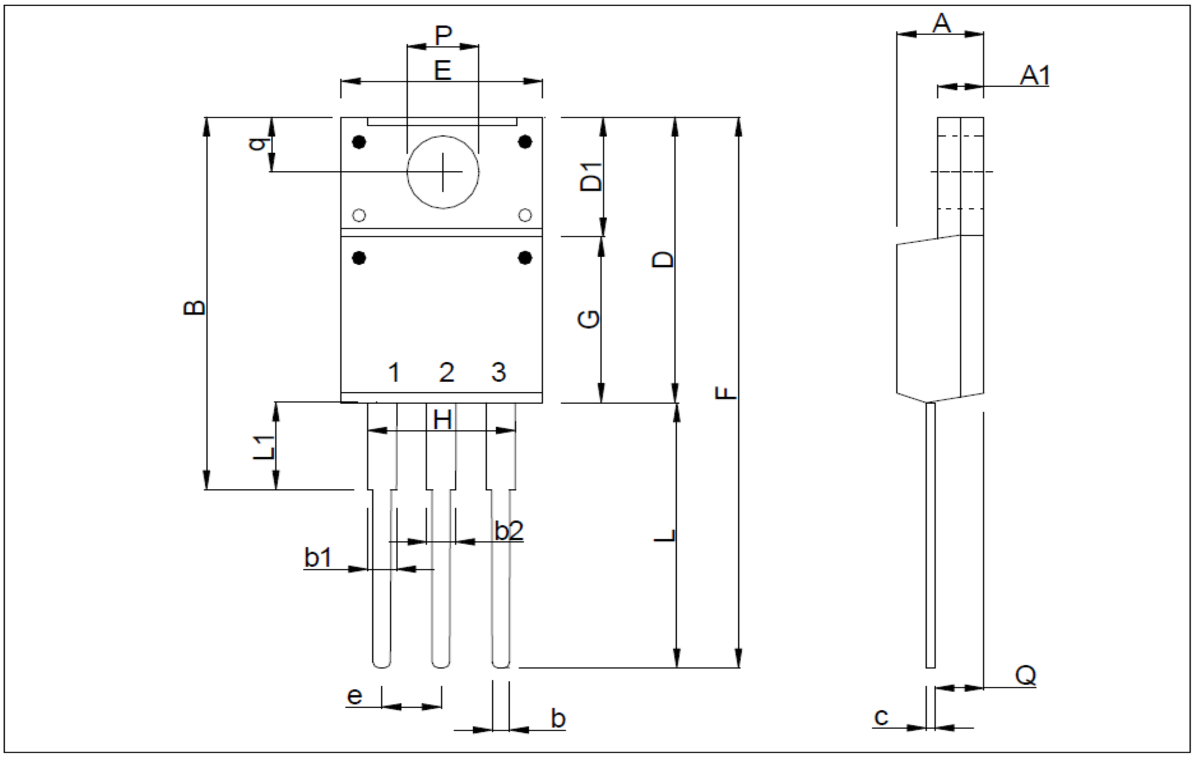
Transient Thermal Response Curve



Package Dimension

TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2		4.93	e	2.05	2.55	3.05
A1	2.34		3.1	F	27.45		30.6
B	17.77		20.3	G	7.72		9.3
b	0.6		1.05	H	6.1		7.1
b1	0.9	1.23	1.62	L	12.5		14.5
b2	0.6		1.9	L1	1.97		3.8
c	0.4		1.0	P	2.98		3.4
D	14.7		16.4	Q	2.1		2.96
D1	6.4		7.5	q	3.0		3.8
E	9.7		10.4				



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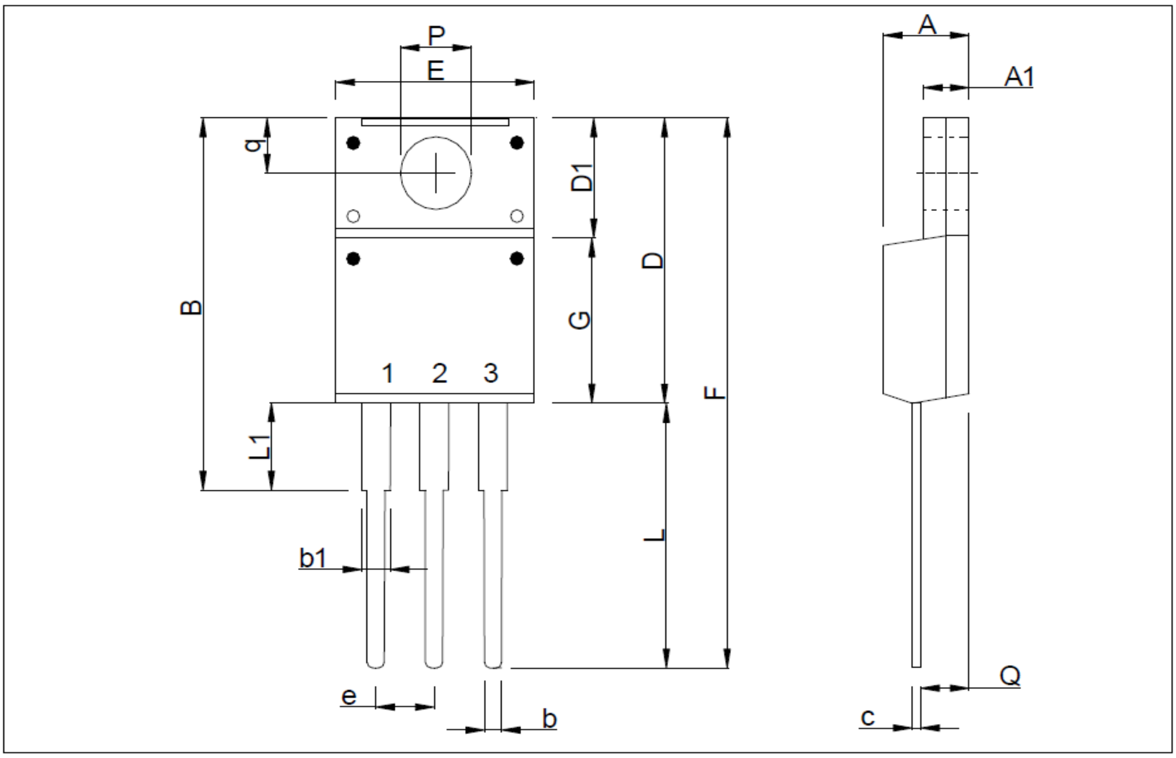
Package Dimension

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				



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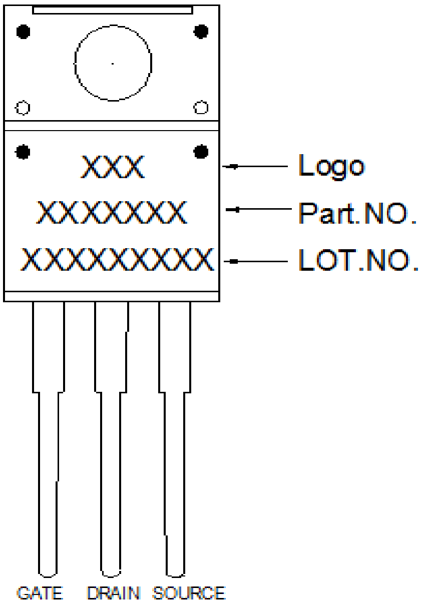
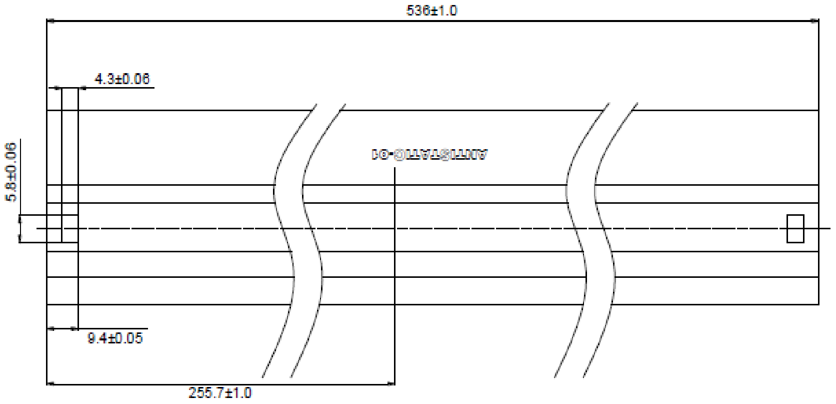
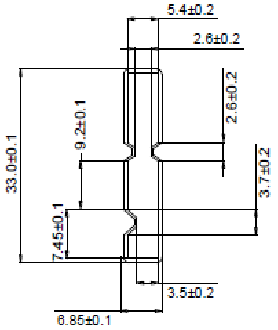
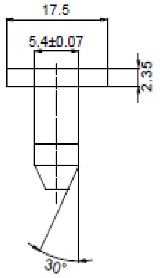
A. Marking Information

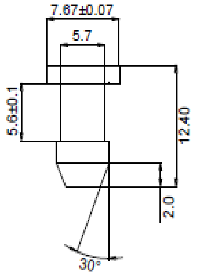


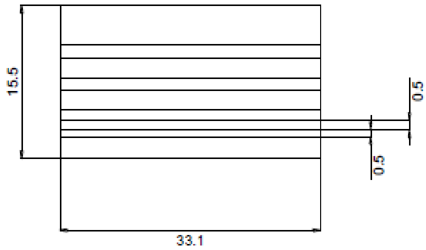
B. Tape&Reel Information:50pcs/Tube(2000pcs/Box)

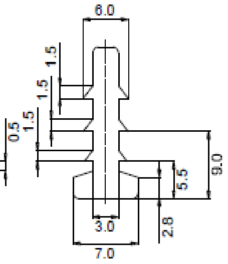






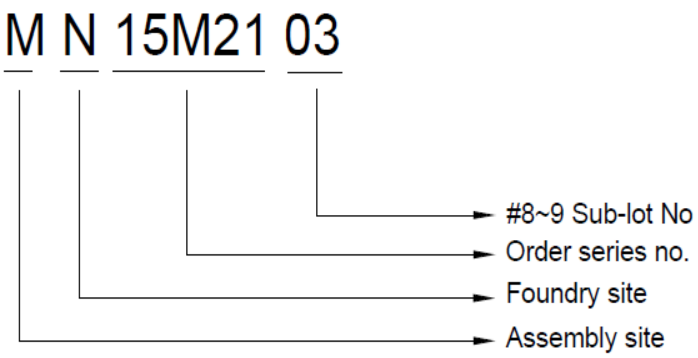




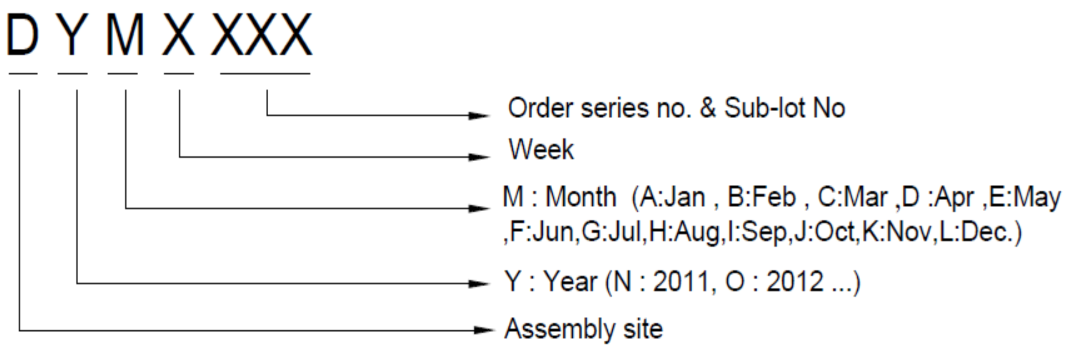


C. Lot.No. & Date Code rule

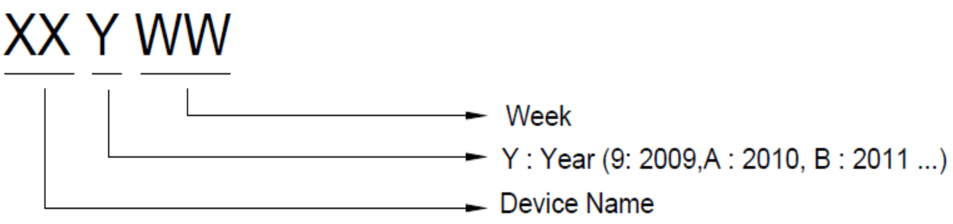
1.LOT.NO.



2.Date Code



3.Date Code (for Small package)



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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	Great Power	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	Pb Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
12	Scan info	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