UNIKC Semiconductor

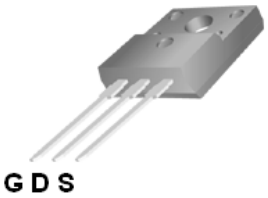
RoHS Compliant

P1060ETF / P1060ETFS

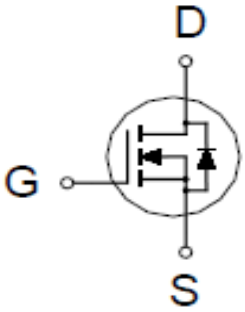
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
600V	0.77Ω @V_{GS} = 10V	10A



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	10	A
	T_C= 100 °C		6	
Pulsed Drain Current[1,2]		I_{DM}	30	
Avalanche Current[3]		I_{AS}	3.5	
Avalanche Energy[3]		E_{AS}	61	mJ
Power Dissipation	T_C= 25 °C	P_D	39	W
	T_C= 100°C		15	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W
Junction-to-Case	$R_{\theta JC}$		3.2	

[1]Pulse width limited by maximum junction temperature.

[2]Limited only by maximum temperature allowed

[3]V_{DD} = 100V , 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	2.9	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 = 5A		0.57	0.77	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} =15V, I_D = 5A		15		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1552		pF
Output Capacitance	C_{oss}			162		
Reverse Transfer Capacitance	C_{rss}			23		
Total Gate Charge[2]	Q_g	V_{DD} = 480V, I_D = 10A, V_{GS} = 10V		49		nC
Gate-Source Charge[2]	Q_{gs}			7		
Gate-Drain Charge[2]	Q_{gd}			20		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 300V , I_D = 10A, R_G = 25Ω		60		nS
Rise Time[2]	t_r			34		
Turn-Off Delay Time[2]	$t_{d(off)}$			220		
Fall Time[2]	t_f			47		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J= 25 °C)						
Continuous Current[3]	I_S				10	A
Forward Voltage[1]	V_{SD}	I_F = 10A, V_{GS} = 0V			1.5	V
Reverse Recovery Time	t_{rr}	I_F= 10A, dI_F/dt=100A/μs		404		nS
Reverse Recovery Charge	Q_{rr}			4.7		uC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

[3]Pulse width limited by maximum junction temperature.

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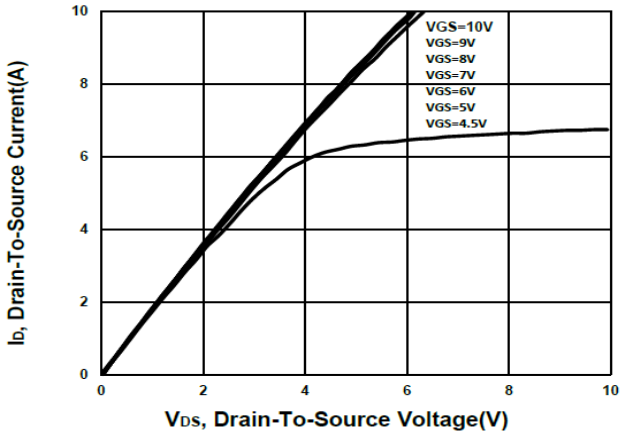
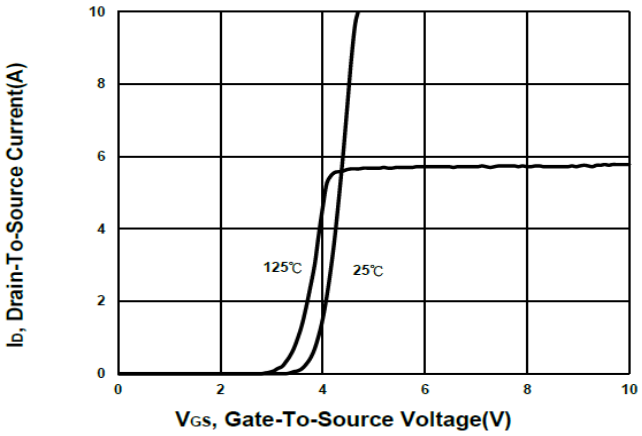
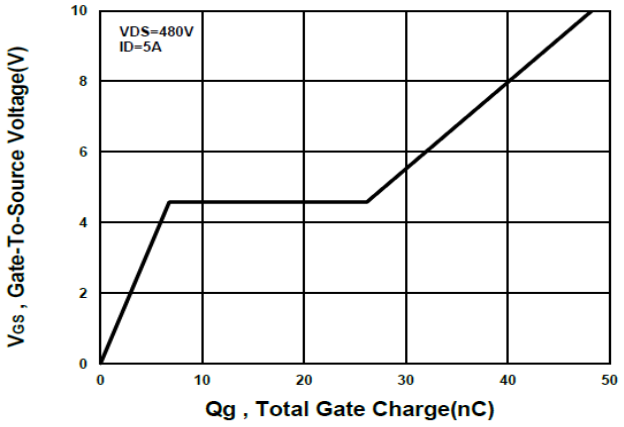
Output Characteristics



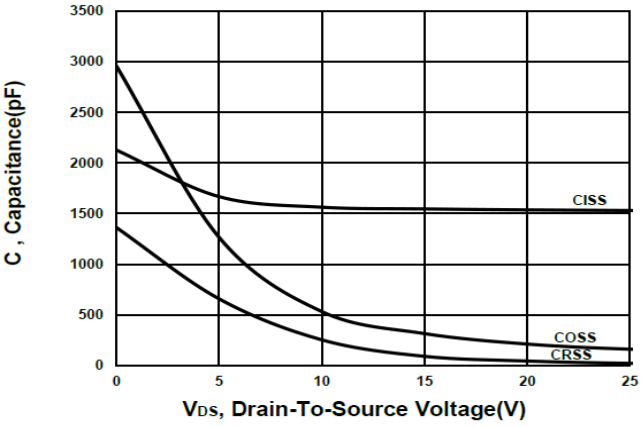
Transfer Characteristics



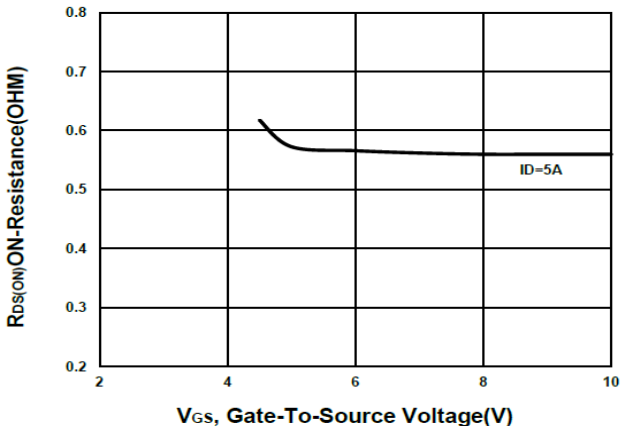
Gate charge Characteristics



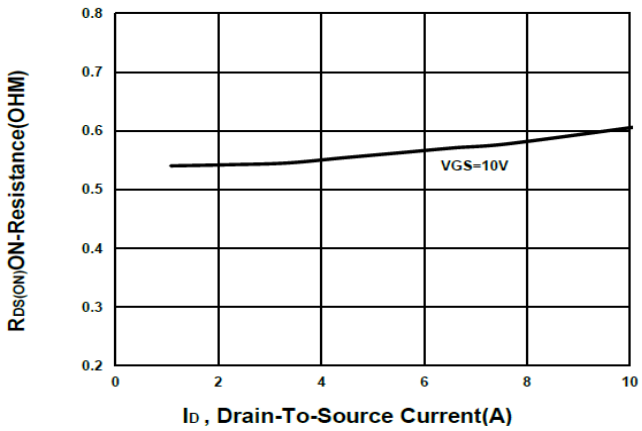
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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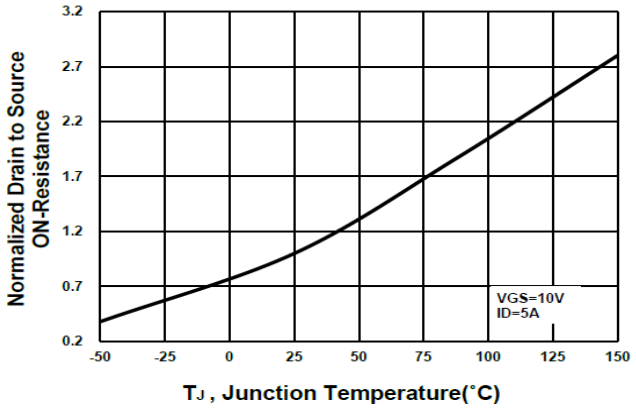
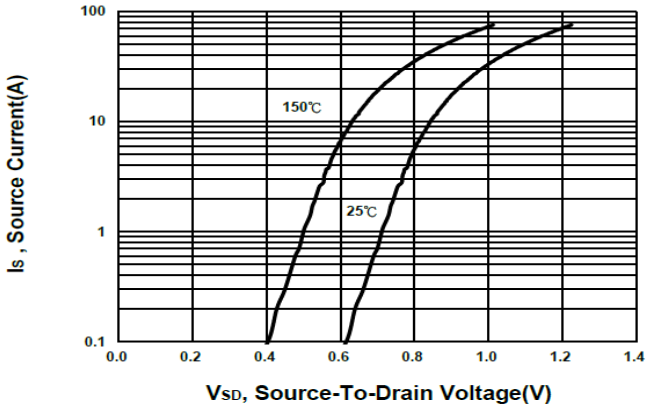
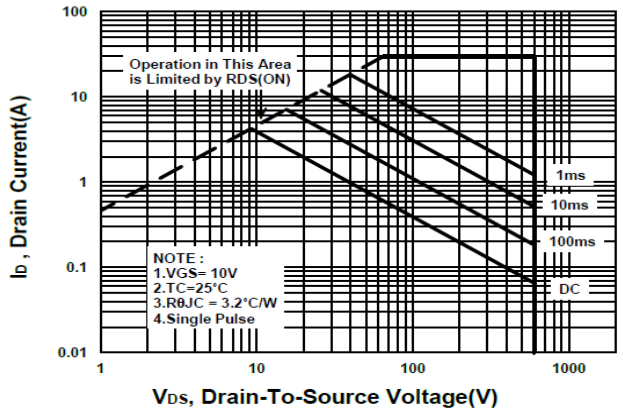
On-Resistance VS Temperature



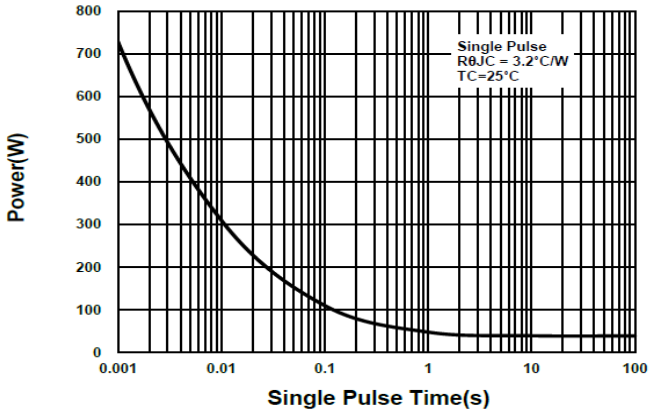
Source-Drain Diode Forward Voltage



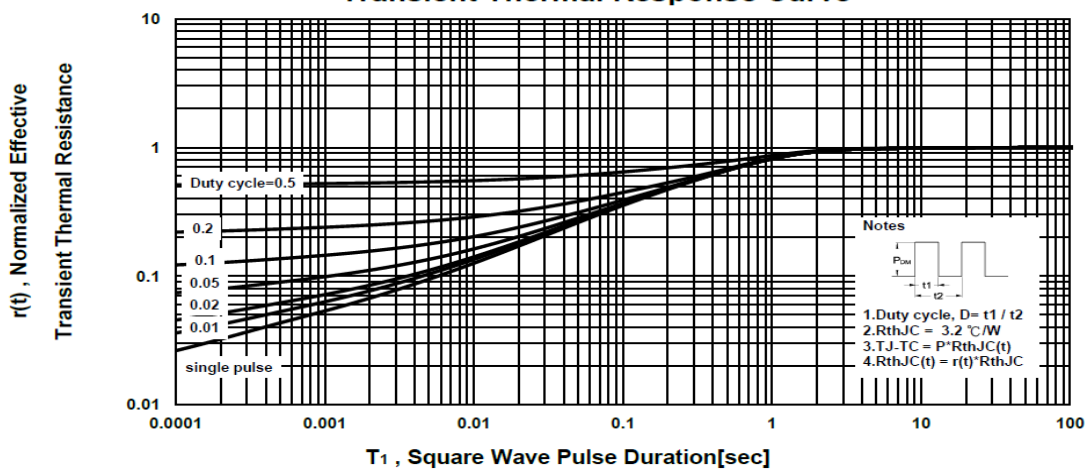
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



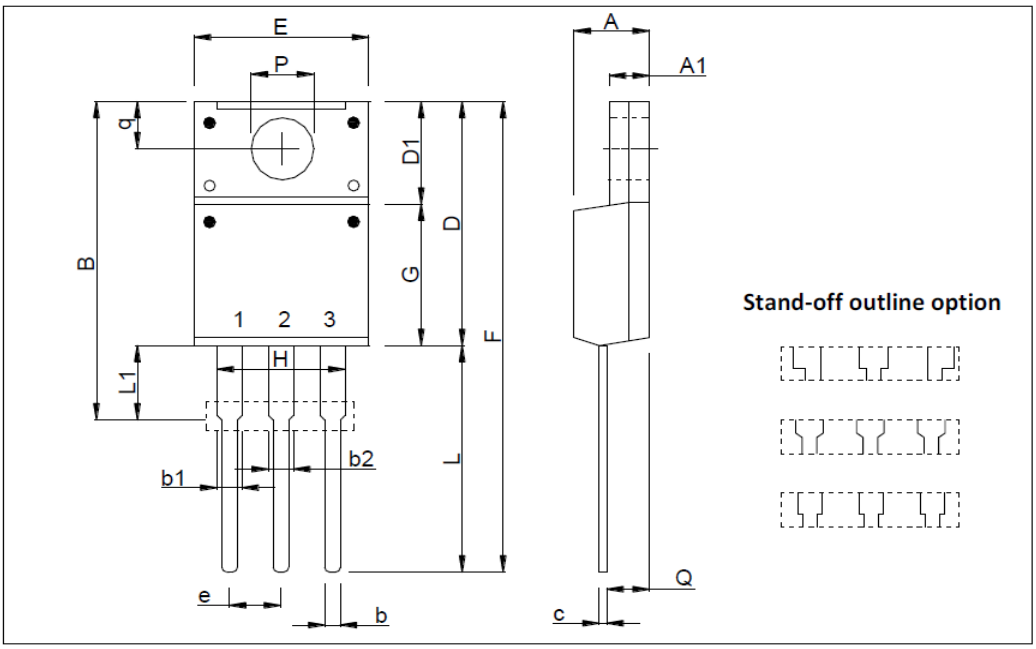
P1060ETF / P1060ETFS

N-Channel Enhancement Mode MOSFET

Package Dimension

TO-220F (3-Lead) MECHANICAL DATA

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				



*因各家封装模具不同而外观略有所差异，不影响电性及Layout。

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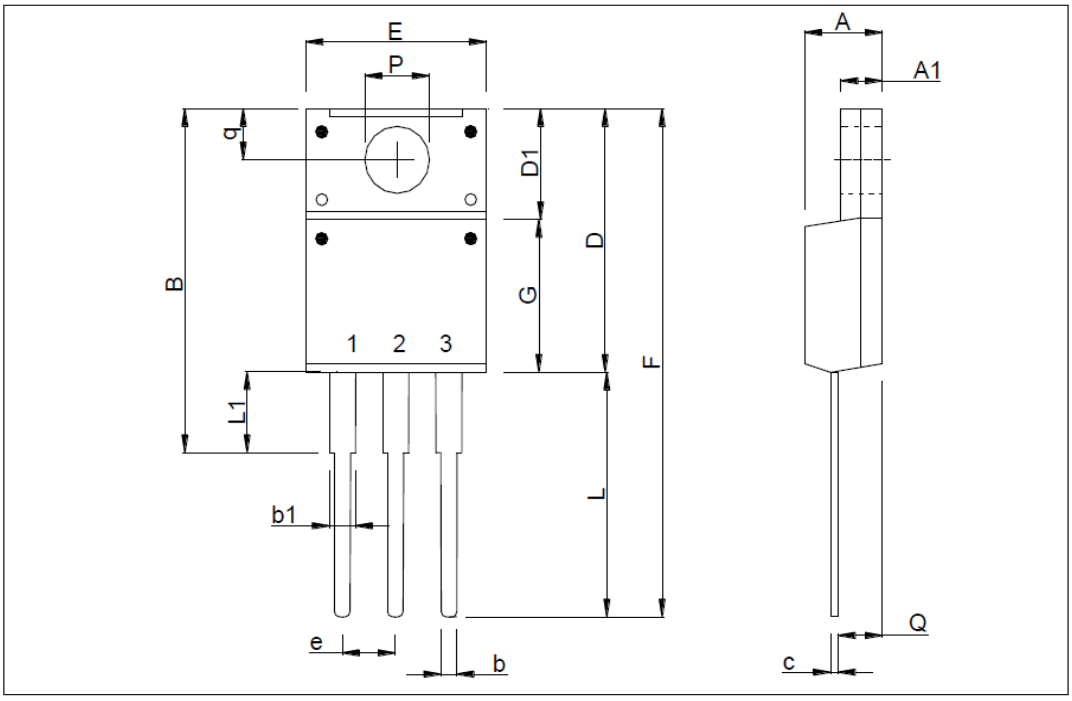
N-Channel Enhancement Mode MOSFET

Package Dimension

TO-220FS (3-Lead) MECHANICAL DATA

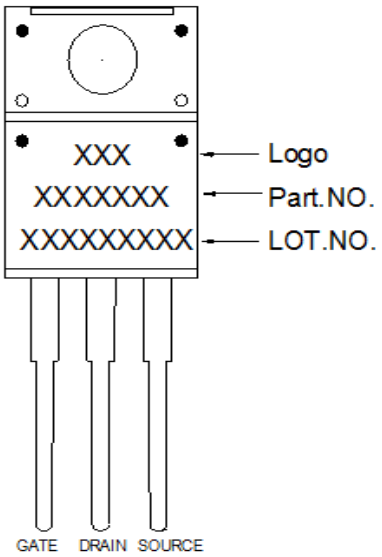
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2	4.7	4.93	e	2.05	2.54	3.05
A1	2.34	2.745	3.15	F	28.00		30.3
B	16.82		20.3	G	8.2	8.87	9.57
b	0.5	0.775	1.05	L	12.37		14.3
b1	0.8	1.15	1.5	L1	1.4	2.3	2.5
c	0.4	0.7	1.0	P	2.98	3.24	3.5
D	14.80		16.3	Q	2.1	2.6	2.96
D1	5.5		7.5	q	2.7	3.25	3.8
E	9.7	10.16	10.36				



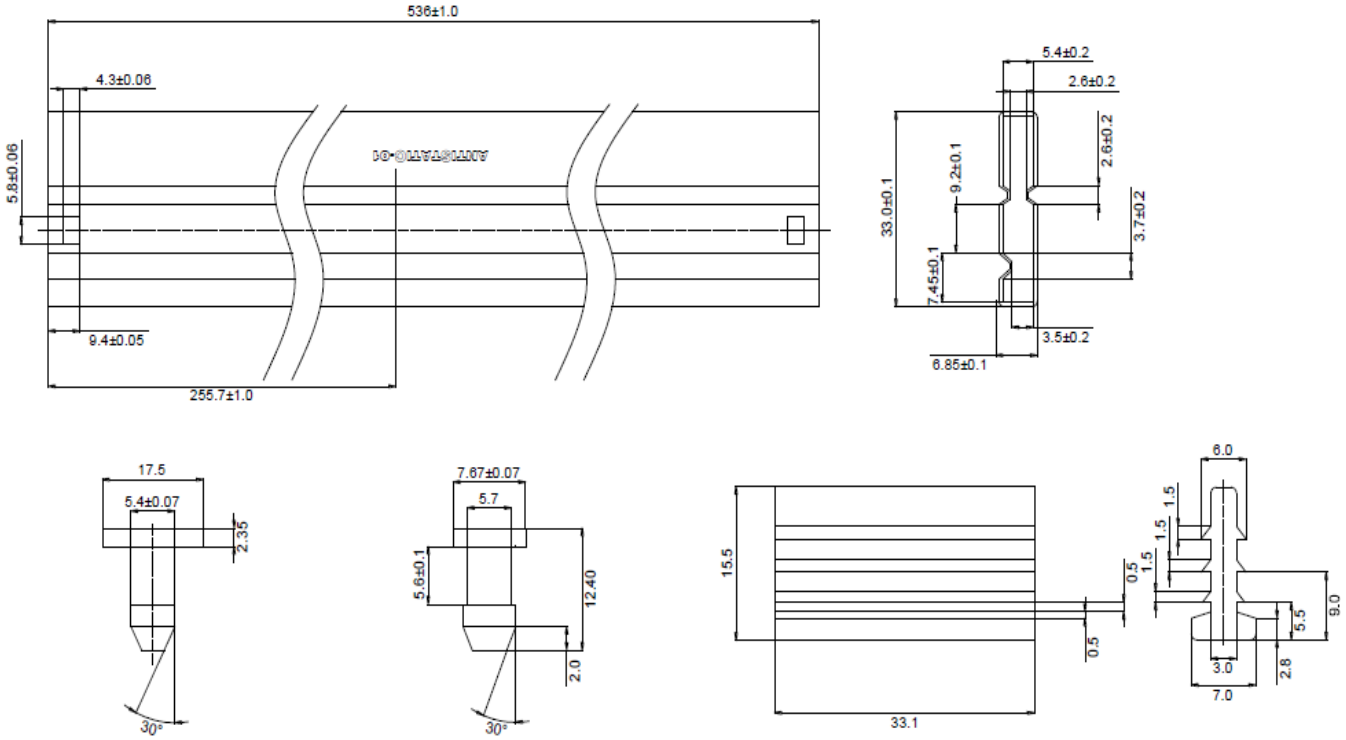
P1060ETF / P1060ETFS

N-Channel Enhancement Mode MOSFET

A. Marking Information



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



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C. Lot.No. & Date Code rule

1.LOT.NO.

M N 15M21 03

- #8~9 Sub-lot No
- Order series no.
- Foundry site
- Assembly site

2.Date Code

D Y M X XXX

- Order series no. & Sub-lot No
- Week
- M : Month (A:Jan , B:Feb , C:Mar ,D :Apr ,E:May ,F:Jun,G:Jul,H:Aug,I:Sep,J:Oct,K:Nov,L:Dec.)
- Y : Year (N : 2011, O : 2012 ...)
- Assembly site

3.Date Code (for Small package)

XX Y WW

- Week
- Y : Year (9: 2009,A : 2010, B : 2011 ...)
- Device Name

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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”0”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