GPT014N03LMA

30V N-Channel MOSFET

Product Summary

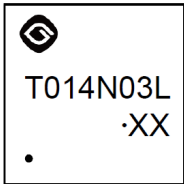| $V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.1mΩ@10V	170A
	1.7mΩ@4.5V	

Feature

- Split Gate Trench technology
- Low $R_{DS(ON)}$
- Low Gate Charge
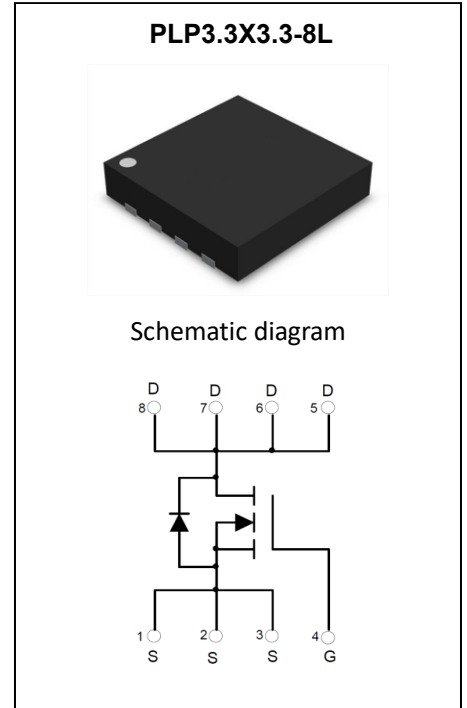- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

MARKING:

T014N03L = Device Code

XX = Date Code

Solid Dot = Green Indicater

PLP3.3X3.3-8L

Schematic diagram

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

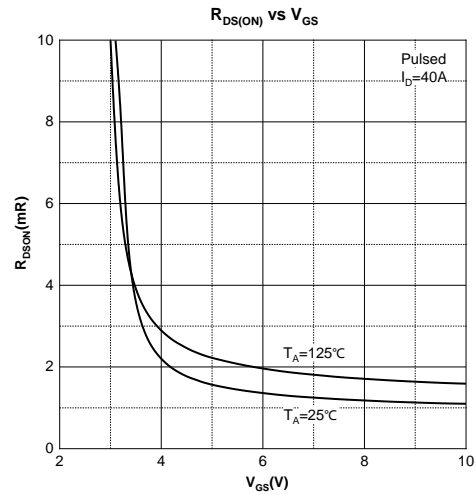| Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	170	A
Continuous Drain Current[1]	T_C = 100℃	I_D	111	A
Pulsed Drain Current[2]		I_{DM}	680	A
Single Pulsed Avalanche Current[3]		I_{AS}	37	A
Single Pulsed Avalanche Energy[3]		E_{AS}	342	mJ
Power Dissipation[5]	T_C = 25℃	P_D	104	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	78	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.2	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T$_A$ = 25℃ unless otherwise noted)

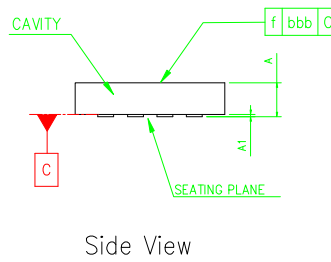| Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ = 250µA	30			V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ = 24V, V$_{GS}$ = 0V			1	µA
Gate - Body Leakage Current	I$_{GSS}$	V$_{GS}$ = ±20V, V$_{DS}$ = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$ = V$_{GS}$, I$_D$ = 250µA	1	1.6	3	V
Drain-source On-resistance	R$_{DS(on)}$	V$_{GS}$ = 10V, I$_D$ = 20A		1.1	1.6	mΩ
		V$_{GS}$ = 4.5V, I$_D$ = 10A		1.7	2.7	
Dynamic Characteristics						
Input Capacitance	C$_{iss}$	V$_{DS}$ = 15V, V$_{GS}$ = 0V, f = 1MHz		3024		pF
Output Capacitance	C$_{oss}$			1607		
Reverse Transfer Capacitance	C$_{rss}$			221		
Gate Resistance	Rg	V$_{DS}$ = 0V, V$_{GS}$ = 0V, f = 1MHz		3.1		Ω
Switching Characteristics						
Total Gate Charge	Q$_g$	V$_{DS}$ = 15V, V$_{GS}$ = 10V, I$_D$ = 20A		54.2		nC
Gate-source Charge	Q$_{gs}$			7.9		
Gate-drain Charge	Q$_{gd}$			10.6		
Turn-on Delay Time	t$_{d(on)}$	V$_{DD}$ = 15V, V$_{GS}$ = 10V, R$_G$ = 3Ω, R$_L$ = 0.75Ω		11		ns
Turn-on Rise Time	t$_r$			20		
Turn-off Delay Time	t$_{d(off)}$			55		
Turn-off Fall Time	t$_f$			36		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V$_{SD}$	V$_{GS}$ = 0V, I$_S$ = 10A			1.2	V

Notes :

1. The maximum current rating is limited by package.And device mounted on a large heatsink

2. Pulse Test : Pulse Width ≤ 10µs, duty cycle ≤ 1%.

3. E$_{AS}$ condition: V$_{DD}$ = 15V, V$_{GS}$ = 10V, L = 0.5mH, R$_G$ = 25Ω Starting T$_J$ = 25°℃.

4. Pulse Test : Pulse Width ≤ 300µs, duty cycle ≤ 2%.

5. The power dissipation P$_D$ is limited by T$_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

6. Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T$_A$ =25°C.

Typical Characteristics

Output Characteristics

V_{GS}=10V,5.5V,4.5V,4V

V_{GS}=3.5V

V_{GS}=3.3V

V_{GS}=3.2V

T_A=25℃
Pulsed

I_D(A) vs V_{DS}(V)

Transfer Characteristics

V_{DS}=3V
Pulsed

T_A=125℃ T_A=25℃

I_D(A) vs V_{GS}(V)

$R_{DS(ON)}$ vs I_D

T_A=25℃
Pulsed

V_{GS}=4.5V

V_{GS}=10V

$R_{DS(ON)}$(mR) vs I_D(A)

$R_{DS(ON)}$ vs V_{GS}

Pulsed
I_D=40A

T_A=125℃

T_A=25℃

R_{DSON}(mR) vs V_{GS}(V)

I_S vs V_{SD}

T_A=125℃ T_A=25℃

I_S(A) vs V_{SD}(V)

Threshold Voltage

I_D=250uA

V_{TH}(V) vs T_J(℃)
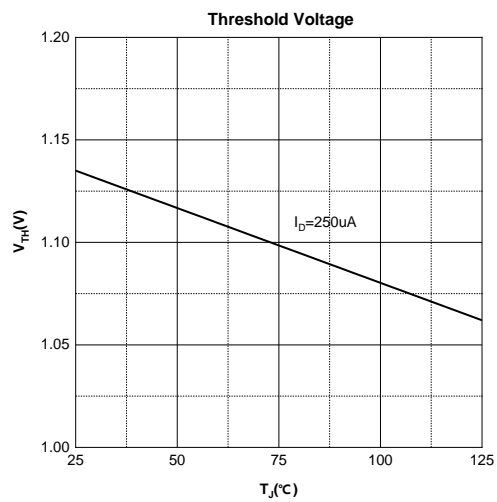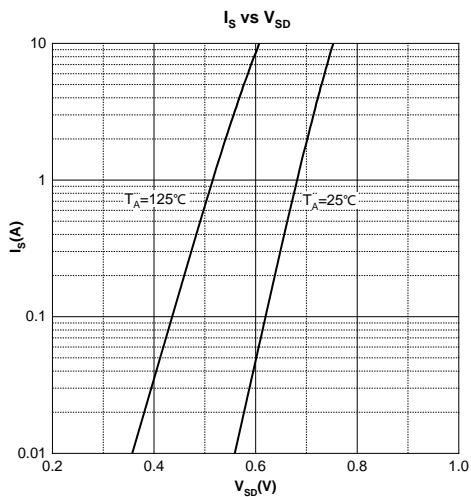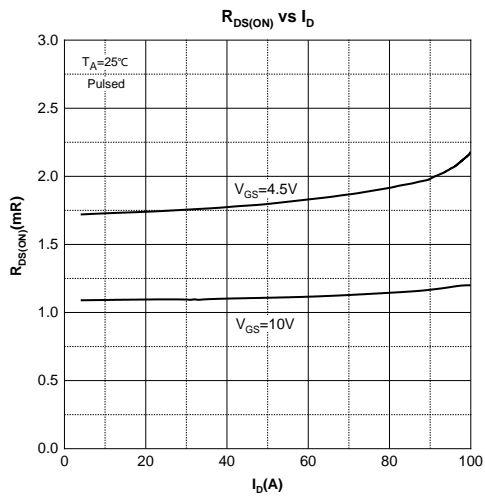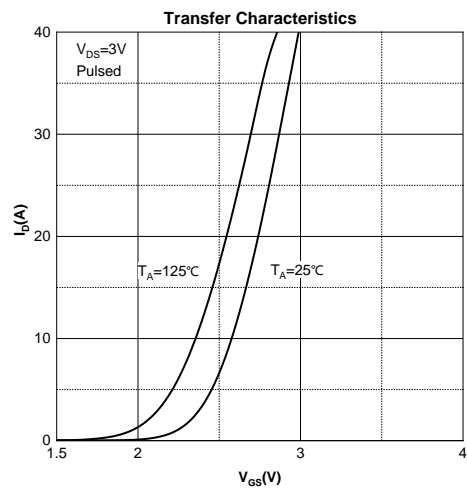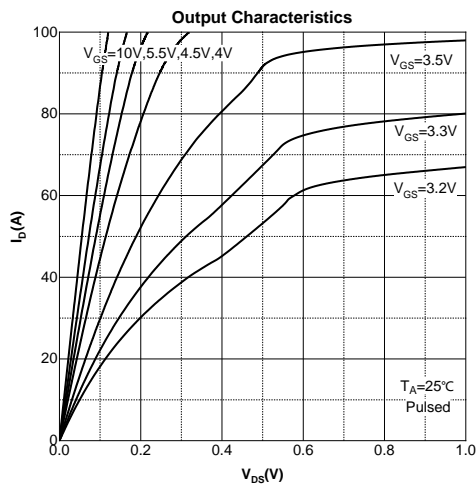
PLP3.3X3.3-8L Package Information

Top View

Bottom View

Side View
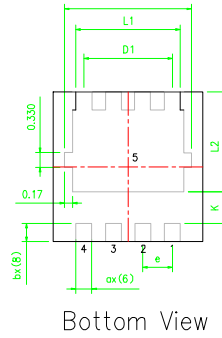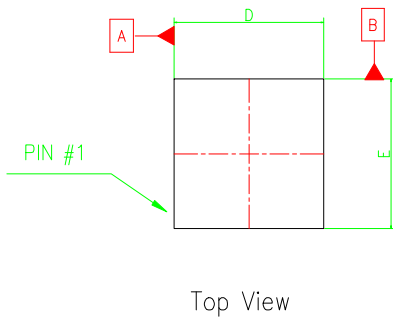
symbol	Dimension in mm		
	MIN	NOM	MAX
A	0.650	0.700	0.750
A1	0.025	0.050	0.075
D	3.200	3.300	3.400
E	3.200	3.300	3.40
D1	——	1.950	——
e	——	0.650	——
ax(6)	0.300	0.350	0.400
bx(8)	0.350	0.400	0.450
L1	2.250	2.300	2.350
L2	2.150	2.200	2.250
L3	2.750	2.800	2.850
K	0.600	0.700	0.800
bbb	0.100		
N	5		
MD/ME	4/2		