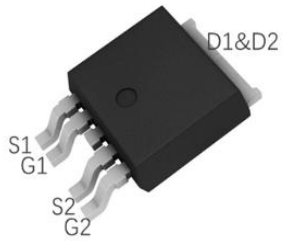
GP30NP32LTG

30V N- and P-Channel MOSFET

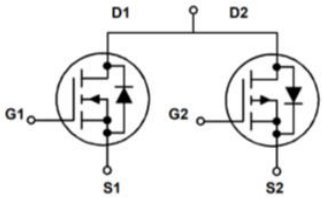
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	16mΩ@10V	19A
	21mΩ@4.5V	
-30V	30mΩ@-10V	-19A
	46mΩ@-4.5V	

TO-252-4L



Schematic diagram



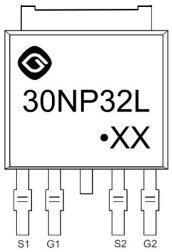
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

MARKING:



30NP32L = Device Code
XX = Date Code
Solid Dot = Green Indicater

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

Parameter		Symbol	Value	Value	Unit
Drain - Source Voltage		V_{DS}	30	30	V
Gate - Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	19	-19	A
	T_C = 100℃	I_D	13	-13	A
Pulsed Drain Current[2]		I_{DM}	76	-76	A
Single Pulsed Avalanche Current[3]		I_{AS}	13	-17	A
Single Pulsed Avalanche Energy[3]		E_{AS}	42	72	mJ
Power Dissipation[5]	T_C = 25℃	P_D	30	30	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	50	50	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	4.2	4.2	℃/W
Junction Temperature		T_J	150	150	℃
Storage Temperature		T_{STG}	-55~ +150	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise noted)

NMOS:

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} = 30V, 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	1.3	1.6	2.3	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 5A		16	32	mΩ
		V_{GS} = 4.5V, I_D = 5A		21	42	
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D = 8A		20		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		475		pF
Output Capacitance	C_{oss}			65		
Reverse Transfer Capacitance	C_{rss}			48		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2.6		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 5A		10		nC
Gate-source Charge	Q_{gs}			1.8		
Gate-drain Charge	Q_{gd}			1.8		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_L = 1.87Ω R_G = 3Ω		5		ns
Turn-on Rise Time	t_r			3		
Turn-off Delay Ttime	$t_{d(off)}$			15		
Turn-off Fall Time	t_f			3		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 10A			1.2	V

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise noted)

PMOS:

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} = -30V, 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	-1.3	-1.7	-2.3	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -5A		30	40	mΩ
		V_{GS} = -4.5V, I_D = -5A		46	70	
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -12A		20		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		915		pF
Output Capacitance	C_{oss}			105		
Reverse Transfer Capacitance	C_{rss}			88		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		36.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -5A		10.7		nC
Gate-source Charge	Q_{gs}			1.0		
Gate-drain Charge	Q_{gd}			1.4		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -10V, R_L = 1.25Ω, R_G = 3Ω		9		ns
Turn-on Rise Time	t_r			6		
Turn-off Delay Ttime	$t_{d(off)}$			20		
Turn-off Fall Time	t_f			7		
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°℃.

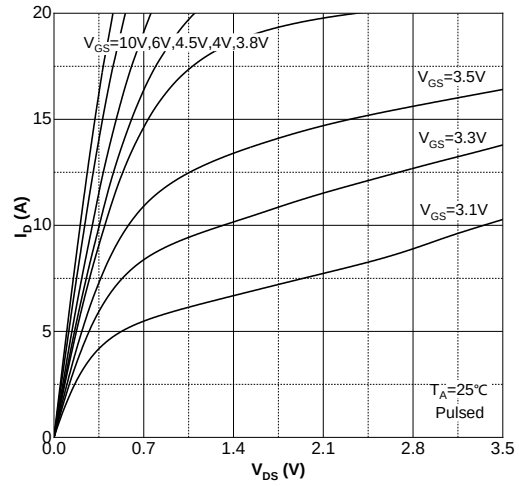
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

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

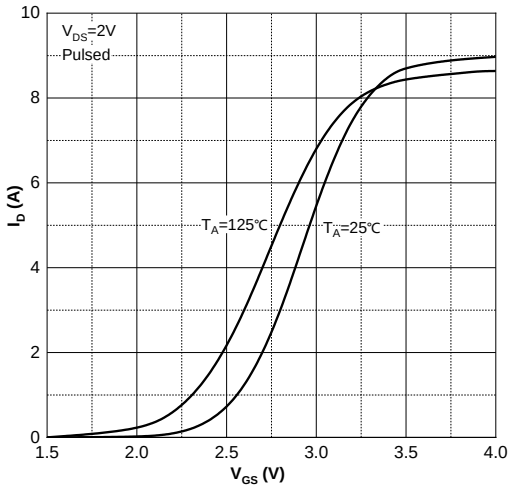
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Characteristics

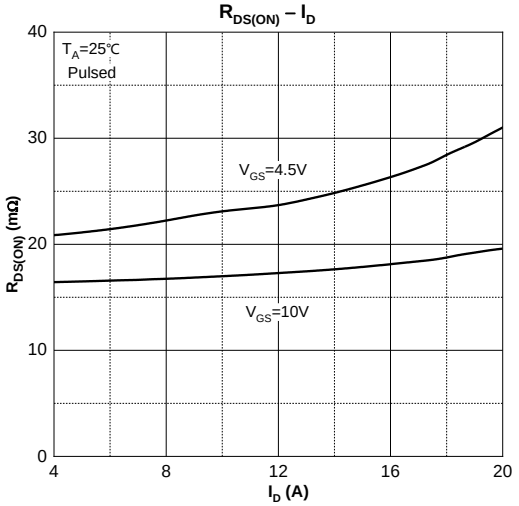
Output Characteristics



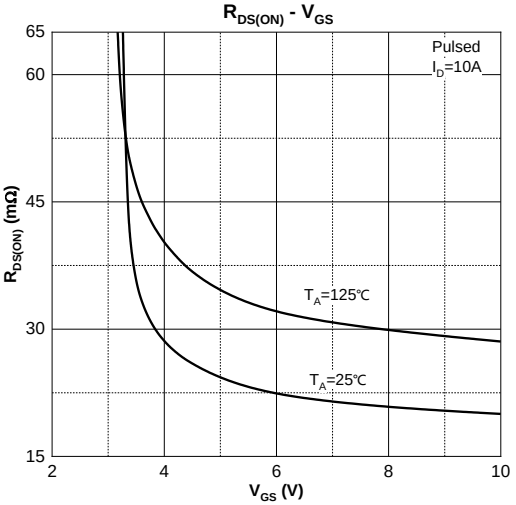
Transfer Characteristics



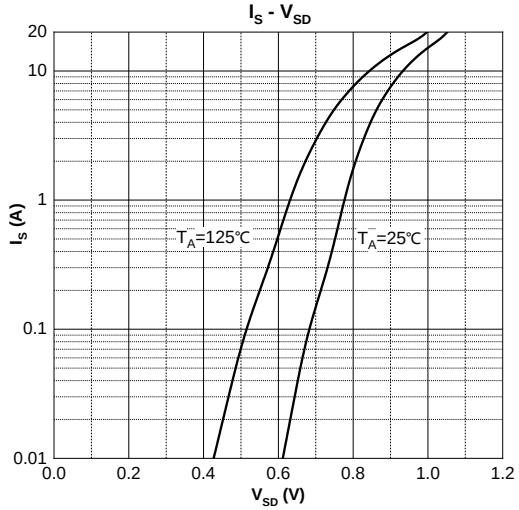
$R_{DS(ON)}$ – I_D



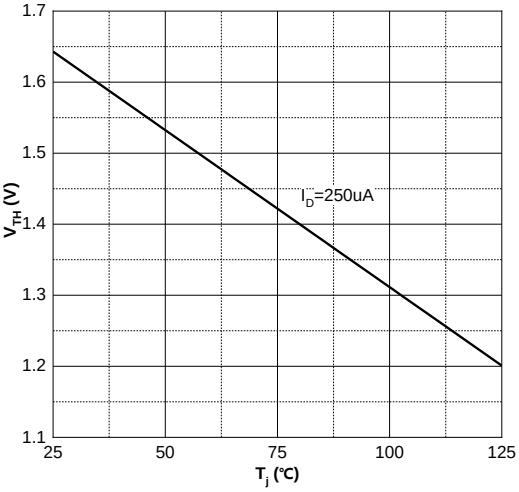
$R_{DS(ON)}$ - V_{GS}



I_S - V_{SD}

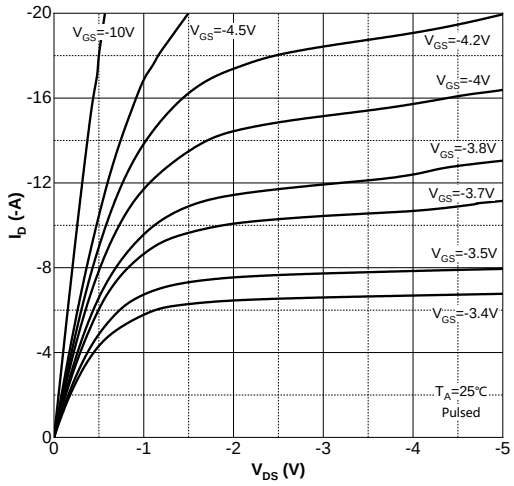


Threshold Voltage

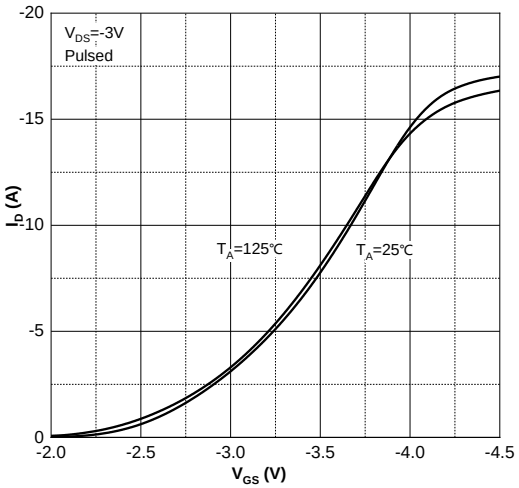


Typical Characteristics

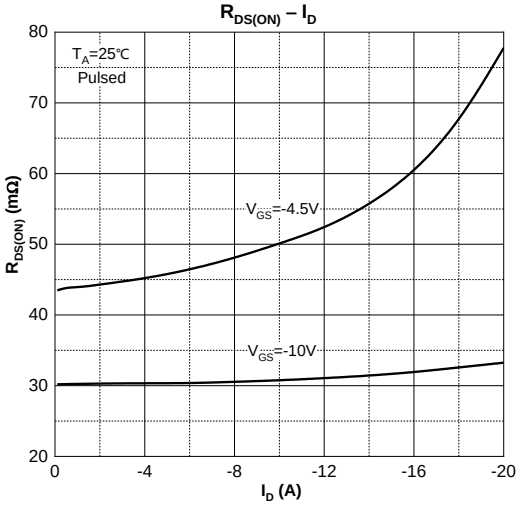
Output Characteristics



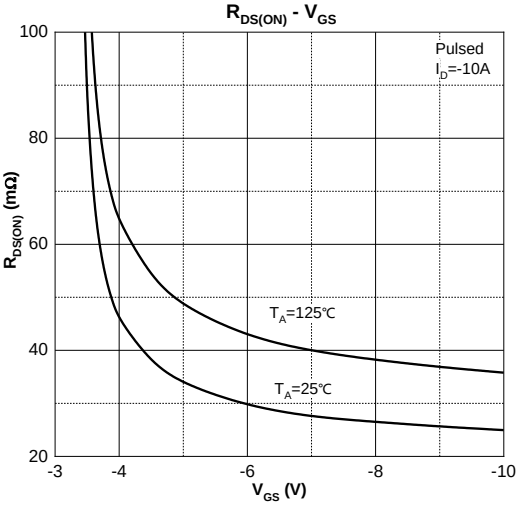
Transfer Characteristics



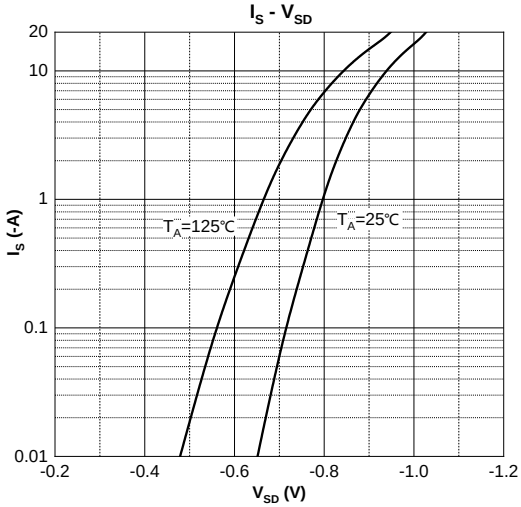
$R_{DS(ON)}$ – I_D



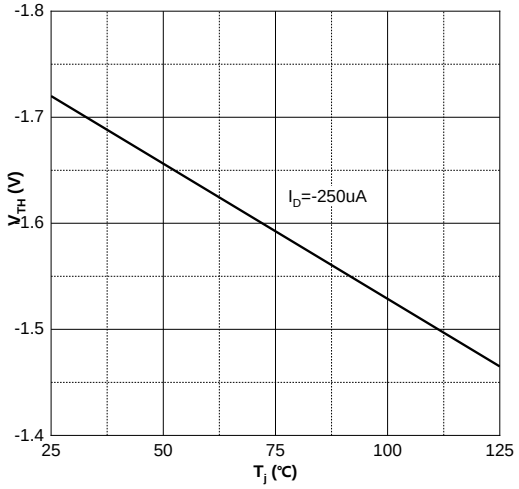
$R_{DS(ON)}$ - V_{GS}



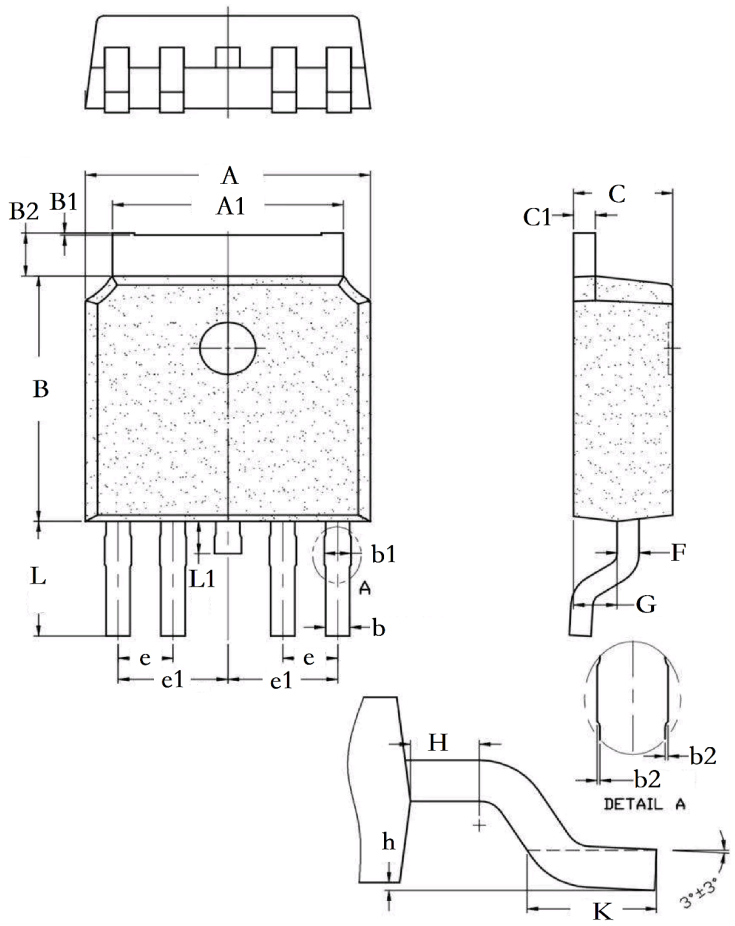
I_S - V_{SD}



Threshold Voltage



TO-252-4L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.550	6.650	0.258	0.262
A1	5.234	5.434	0.206	0.214
B	6.050	6.150	0.238	0.242
B1	0.000	0.050	0.000	0.002
B2	0.962	1.162	0.038	0.046
C	2.250	2.350	0.089	0.093
C1	0.458	0.558	0.018	0.022
L	2.698	2.998	0.106	0.118
L1	0.700	0.900	0.028	0.035
b	0.510	0.610	0.020	0.024
b1	0.570	0.670	0.022	0.026
b2	0.000	0.050	0.000	0.002
e	1.270TYP		0.050TYP	
e1	2.540TYP		0.100TYP	
F	0.458	0.558	0.018	0.022
G	0.960	1.06	0.038	0.042
H	0.650	0.950	0.026	0.037
h	0.050	0.150	0.002	0.006
K	1.300	1.700	0.051	0.067