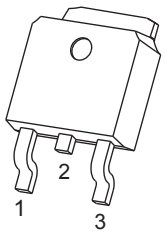
GP30P10D

100V P-Channel MOSFET

Product Summary

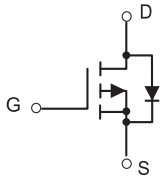
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-100V	42mΩ@-10V	-30A
	48mΩ@-4.5V	

TO-252-2L



1. GATE
2. DRAIN
3. SOURCE

Schematic diagram



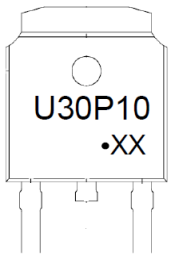
Feature

- Super high dense cell design
- Advanced trench process technology
- Reliable and rugged
- High density cell design for ultra low On-Resistance

Application

- Portable equipment and battery powered systems

MARKING:



U30P10 = Device Code
XX = Date Code
Solid Dot = Green Indicater

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1]	I_D	-30	A
Pulsed Drain Current[2]	I_{DM}	-150	A
Single Pulse Avalanche Energy[3]	E_{AS}	345	mJ
Avalanche Current[3]	I_{AS}	28	A
Total Power Dissipation[5]	P_D	120	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.25	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C 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	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -80V, 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	-1.5	-2.0	-2.5	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A		42	55	mΩ
		V_{GS} = -4.5V, I_D = -15A		48	65	
Forward tranconductance	g_{FS}	V_{DS} = -10V, I_D = -10A	20			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -25V, V_{GS} = 0V, f = 1MHz		6616		pF
Output Capacitance	C_{oss}			230		
Reverse Transfer Capacitance	C_{rss}			130		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -80V, V_{GS} = -10V, I_D = -14A		95		nC
Gate-source Charge	Q_{gs}			19		
Gate-drain Charge	Q_{gd}			15		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -50V, V_{GS} = -10V, I_D = -14A, R_G = 3.3Ω		23		ns
Turn-on Rise Time	t_r			34		
Turn-off Delay Time	$t_{d(off)}$			125		
Turn-off Fall Time	t_f			65		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -10A			-1.2	V
Continuous Source Current	I_S	V_G = V_D = 0V, Force Current			-30	A
Reverse Recovery Time	t_{rr}	I_F = -14A, dI/dt = 100A/μs		31.2		nS
Reverse Recovery Charge	Q_{rr}			31.97		nC

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} = 34V, 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 Electrical and Thermal Characteristics

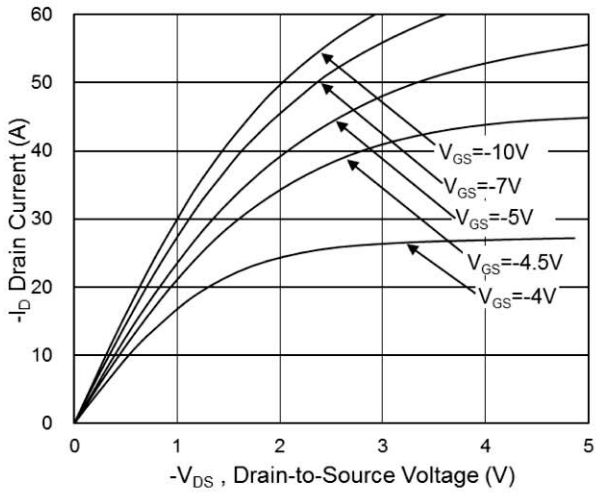


Fig.1 Typical Output Characteristics

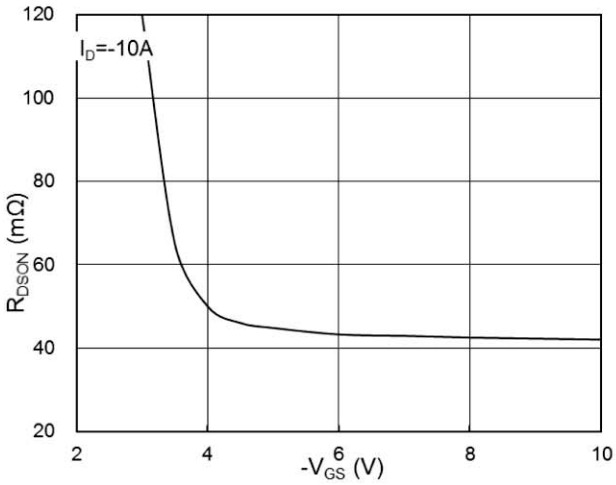


Fig.2 On-Resistance vs. G-S Voltage

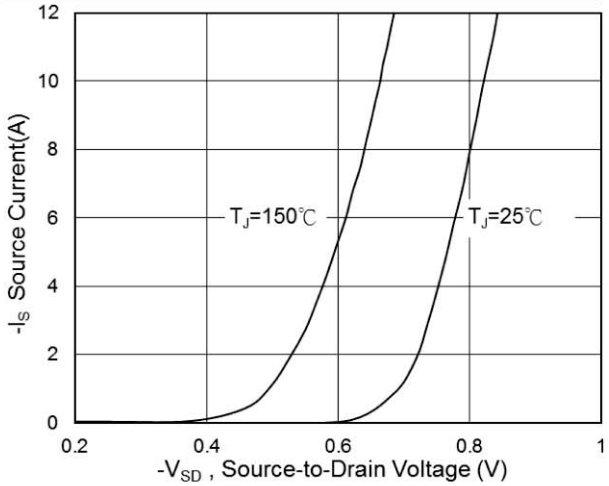


Fig.3 Typical S-D Diode Forward Voltage

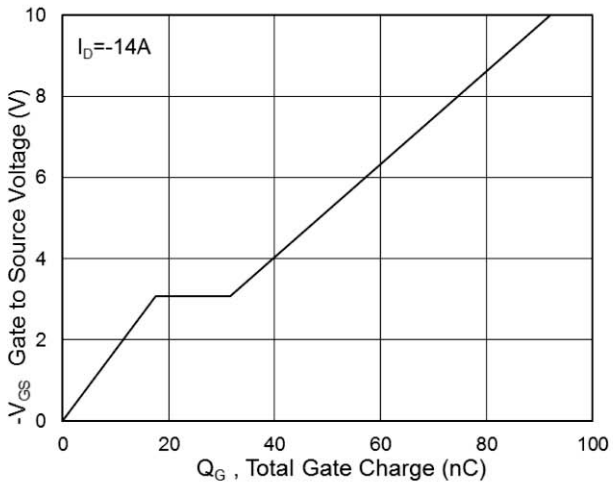


Fig.4 Gate-Charge Characteristics

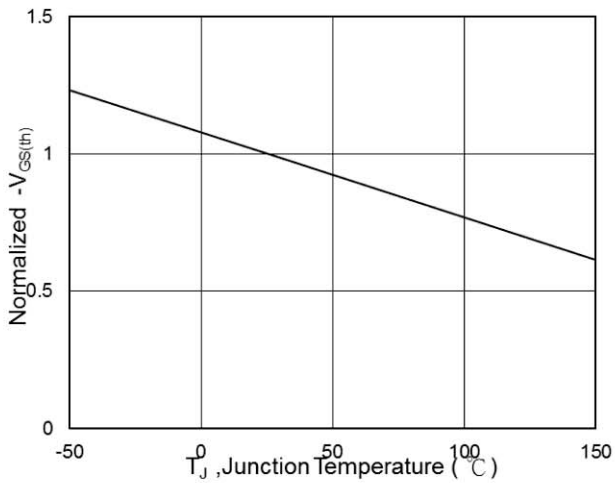


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

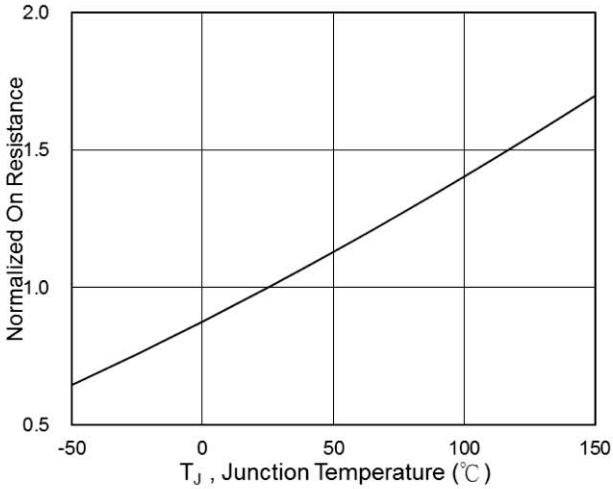


Fig.6 Normalized R_{DSON} vs. T_J

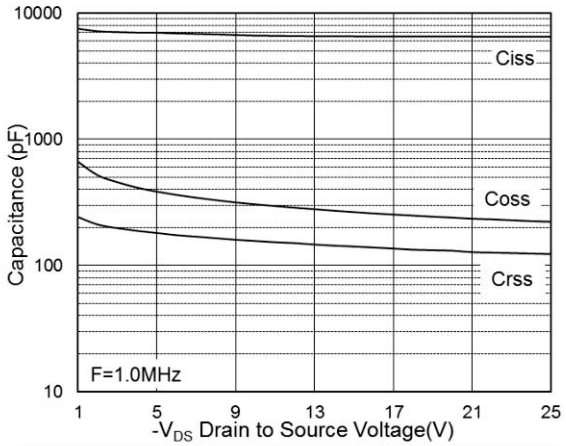


Fig.7 Capacitance

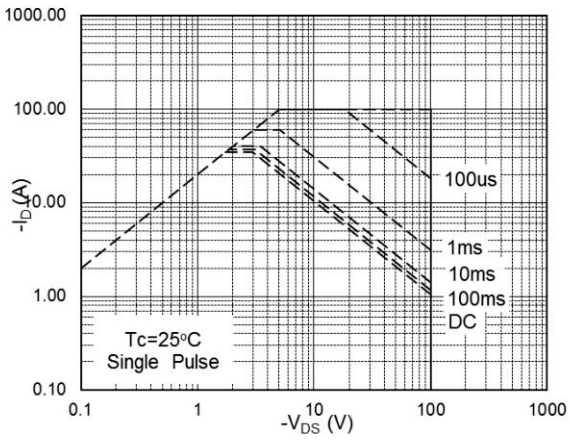


Fig.8 Safe Operating Area

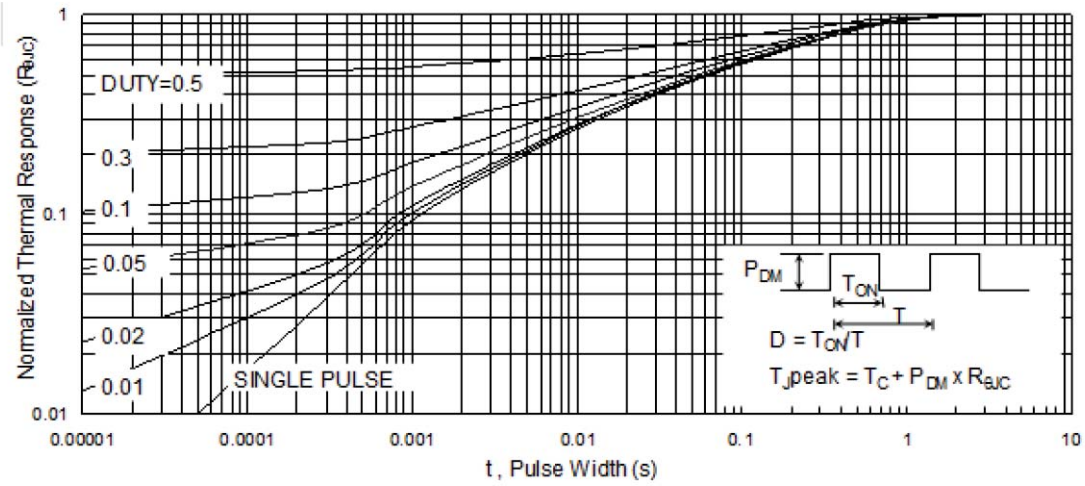
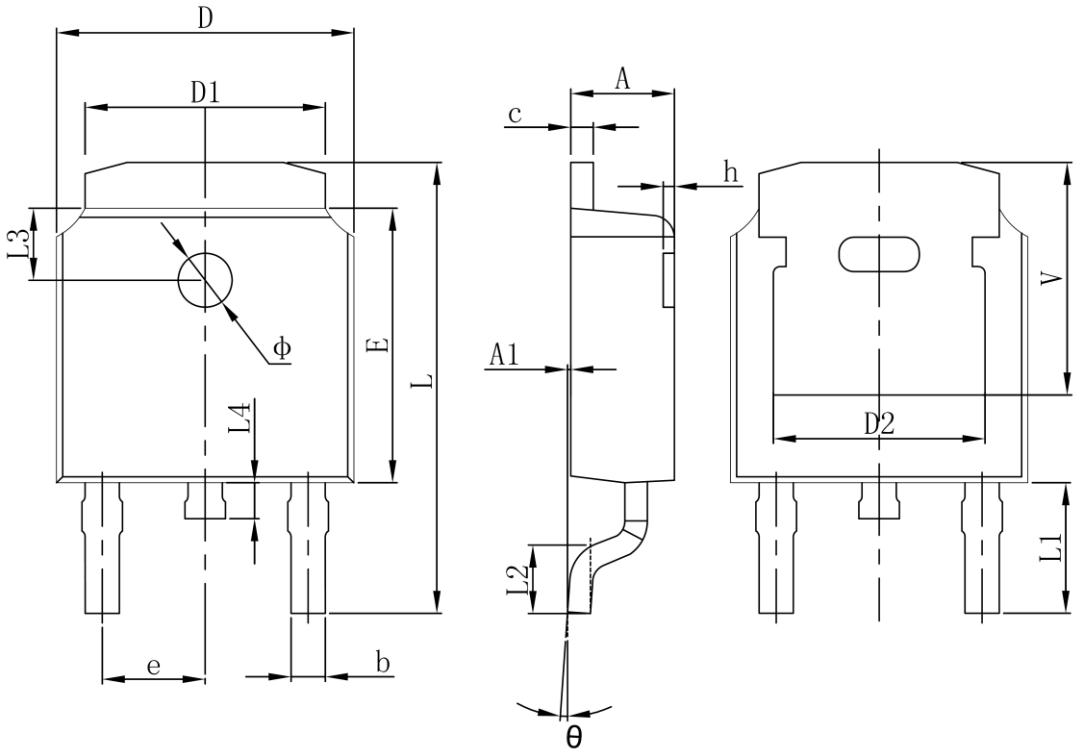


Fig.9 Normalized Maximum Transient Thermal Impedance

TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830REF		0.190REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900REF		0.114REF	
L2	1.400	1.700	0.055	0.067
L3	1.600REF		0.063REF	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250REF		0.207REF	

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