



Product Summary

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

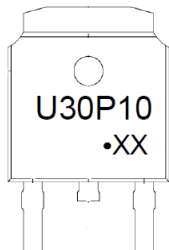
Feature

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

Application

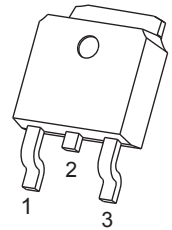
- Portable equipment and battery powered systems

MARKING:



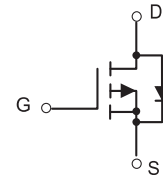
U30P10 = Device Code
XX = Date Code
Solid Dot = Green Indicator

TO-252-2L



1. GATE
2. DRAIN
3. SOURCE

Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$ 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	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -80V, V_{GS} = 0V$			-1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.5	-2.0	-2.5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$		42	55	m Ω
		$V_{GS} = -4.5V, I_D = -15A$		48	65	
Forward transconductance	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	$t_{d(on)}$	$V_{DD} = -50V, V_{GS} = -10V, I_D = -14A, R_G = 3.3\Omega$		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	$V_G = V_D = 0V, \text{Force Current}$			-30	A
Reverse Recovery Time	t_{rr}	$I_F = -14A, di/dt = 100A/\mu s$		31.2		nS
Reverse Recovery Charge	Q_{rr}				31.97	

Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 34V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.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 $T_A = 25^\circ\text{C}$.

Typical Electrical and Thermal Characteristics

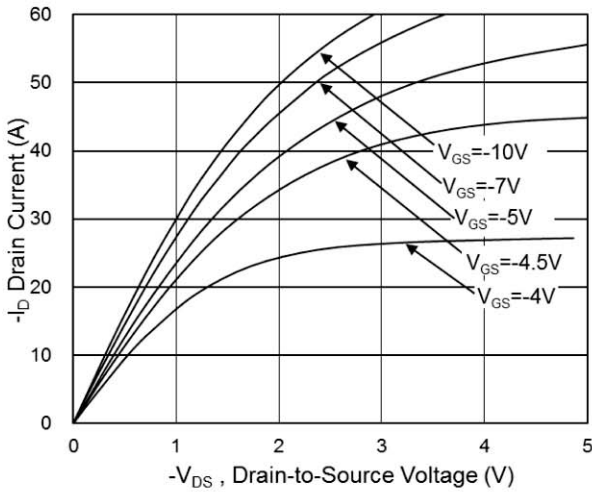


Fig.1 Typical Output Characteristics

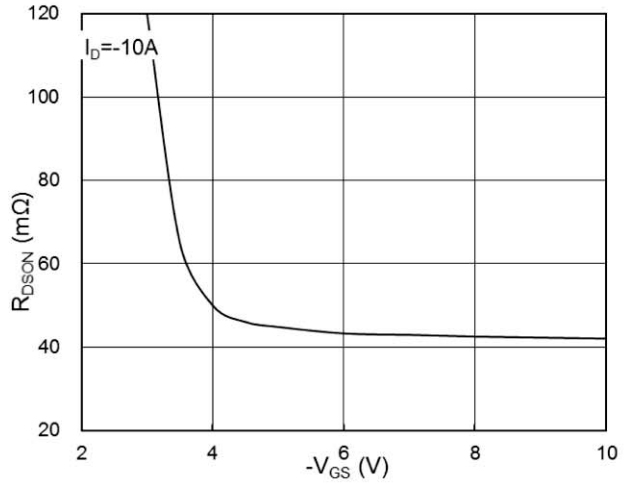


Fig.2 On-Resistance vs. G-S Voltage

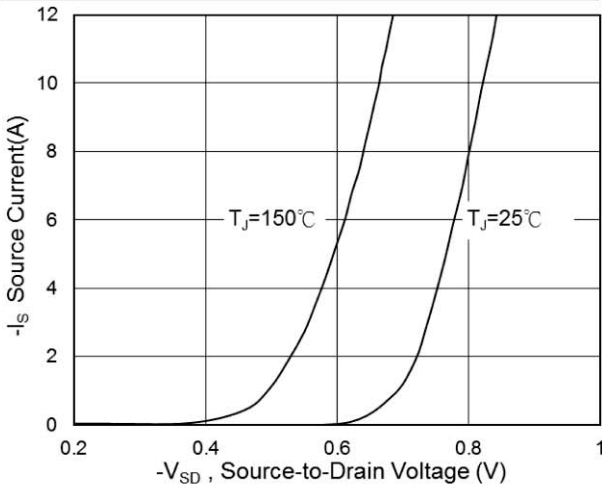


Fig.3 Typical S-D Diode Forward Voltage

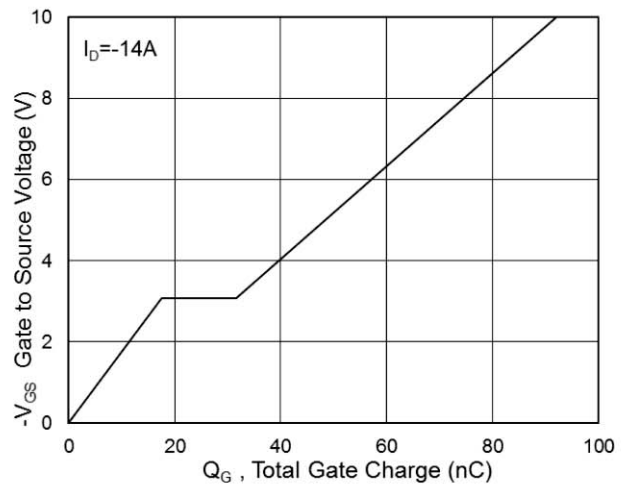


Fig.4 Gate-Charge Characteristics

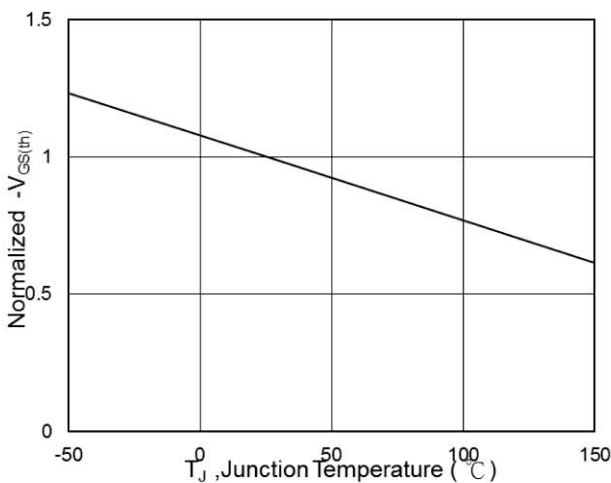


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

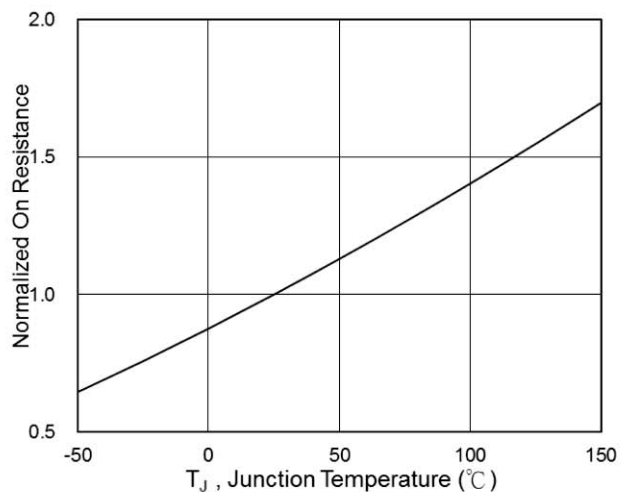


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

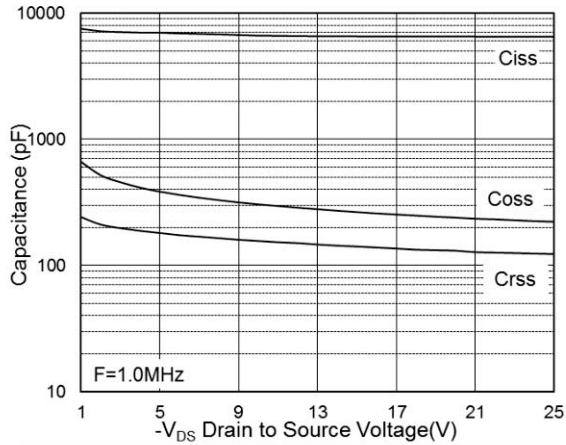


Fig.7 Capacitance

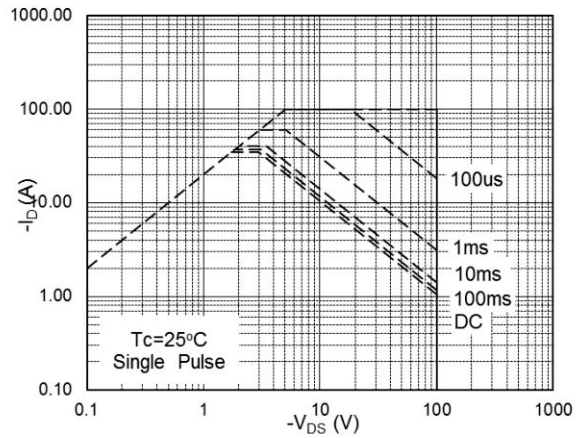


Fig.8 Safe Operating Area

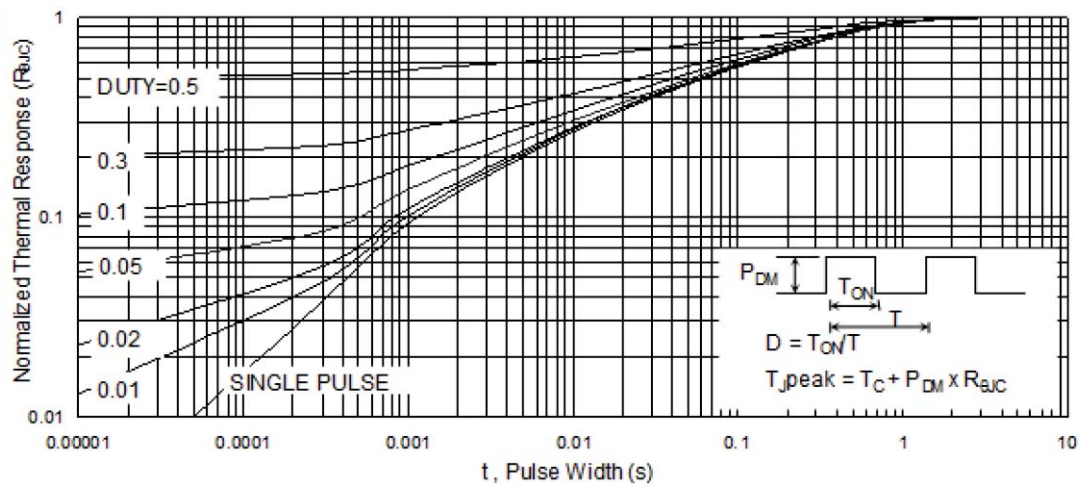
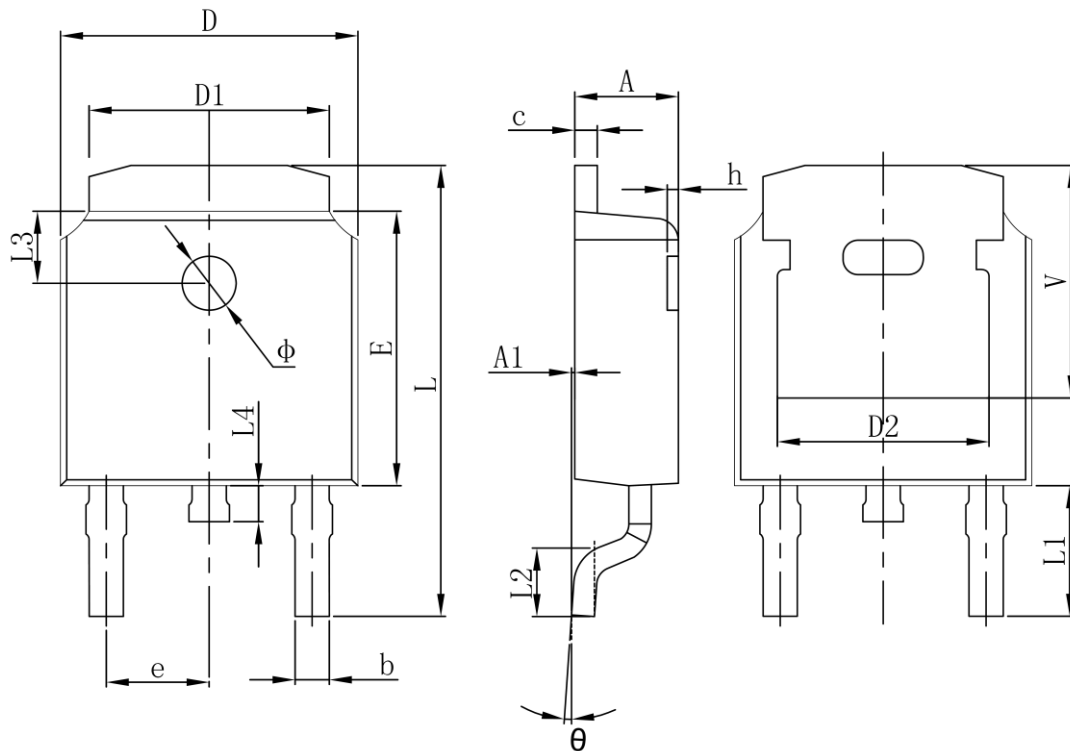


Fig.9 Normalized Maximum Transient Thermal Impedance

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	

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.