



PJS6630

20V P- MOSFET Load Switch with Level Shift & Adjustable Slew Rate

Voltage **20 V** **Current** **3.6A**

Features

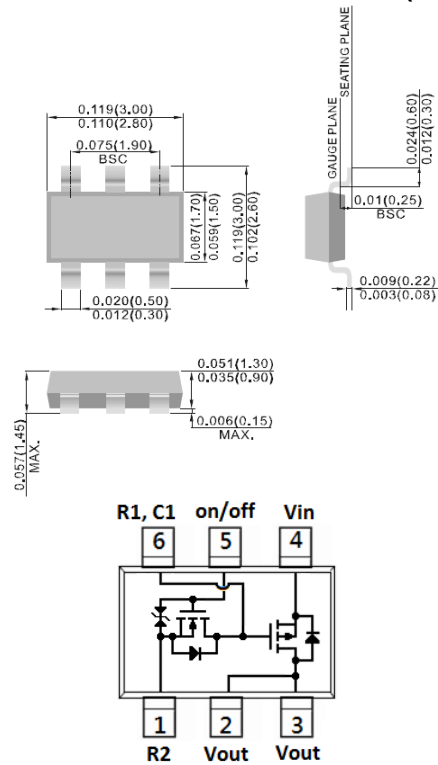
- $V_{drop} = 0.2V @ V_{in}=12V, I_L=3.6A, R_{DS(ON)}= 53m\Omega$
- $V_{drop} = 0.2V @ V_{in}=5.0V, I_L=3.4A, R_{DS(ON)}= 57m\Omega$
- $V_{drop} = 0.2V @ V_{in}=2.5V, I_L=2.8A, R_{DS(ON)}= 70m\Omega$
- Advanced Trench Process Technology
- Adjustable Turn on/off Slew Rate Control through external R1, R2 and C1.
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: SOT-23 6L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: SL0

SOT-23 6L

Unit : inch(mm)



Maximum Ratings and Thermal Characteristics ($T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	SYMBOL	RATING	UNITS
Input Voltage Range ^(Note 1)	V_{IN}	20	V
On/Off Voltage Range	V_{ON}/V_{OFF}	12	V
Continuous Load Current ^(Note 2,3)	I_D	3.6	A
Pulsed Load Current ^(Note 4)	I_D	14.4	A
Power Dissipation ^(Note 2)	P_D	0.83	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}C$
ESD, MIL-STD-883D HBM (100pF/1.5kohm) ($V_{on/off}$ pin)	V_{ESD}	2	kV
Typical Junction to Ambient ^(Note 2)	$R_{\theta JA}$	150	$^{\circ}C/W$



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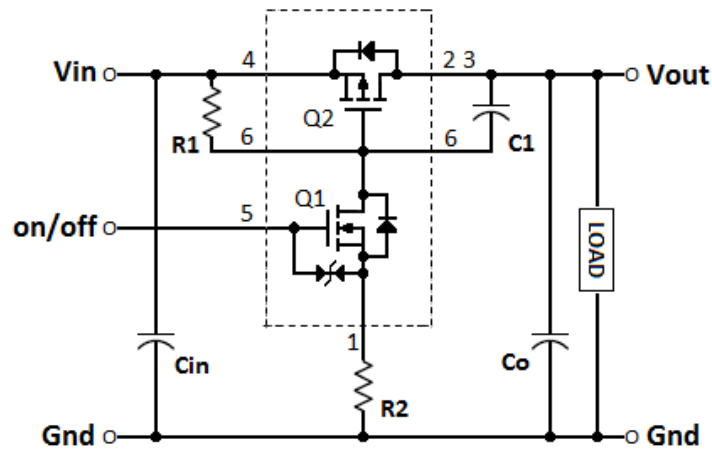
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Off Characteristics						
Leakage Current	I_{FL}	$V_{IN}=20V, V_{ON}/V_{OFF}=0V$	-	-	1	μA
Diode Forward Voltage	V_{SD}	$I_S=-1.0A$	-	-0.76	-1.2	V
On Characteristics						
Input Voltage Range	V_{IN}		2.5	-	20	V
On/Off Voltage Range	V_{ON}/V_{OFF}		2.5	-	12	V
Drain-Source On-State Resistance (Q_2)	$R_{DS(on)}$	$V_{GS}=-12V, I_D=-3.6A$	-	45	53	m Ω
		$V_{GS}=-5.0V, I_D=-3.4A$	-	49	57	
		$V_{GS}=-2.5V, I_D=-2.8A$	-	59	70	

NOTES :

- V_{IN} Range can be up to 20V, but R1 and R2 must be scaled such that V_{GS} do not exceed 12V.
- $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper
- The maximum current rating is package limited
- Pulse test: pulse width $\leq 300\mu S$, duty cycle $\leq 2\%$

Application Circuits



Component Table		
R1	Pull-Up Resistor	Typical 10k Ω to 1M Ω
R2	Optional Slew-Rate Control	Typical 0k Ω to 100k Ω
C1	Optional Slew-Rate Control	Typical 1 μF
Note: R1 should be at least $10 * R_2$ to ensure Q1 turn-on		



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TYPICAL CHARACTERISTIC CURVES

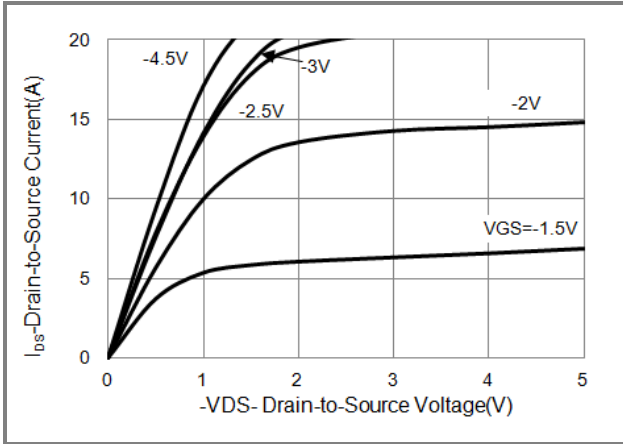


Fig.1 Output Characteristics

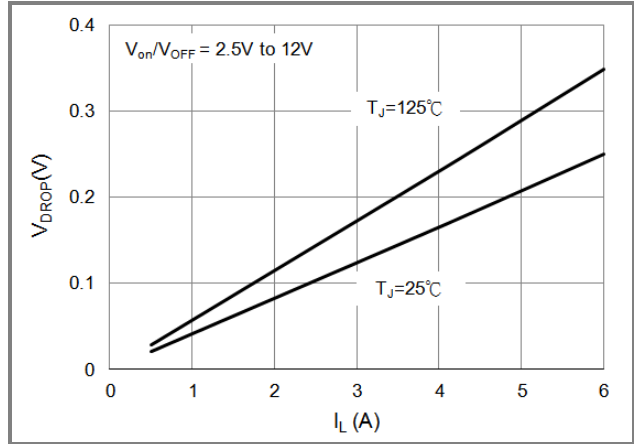


Fig.2 Vdrop vs Load Current at $V_{in} = 12V$

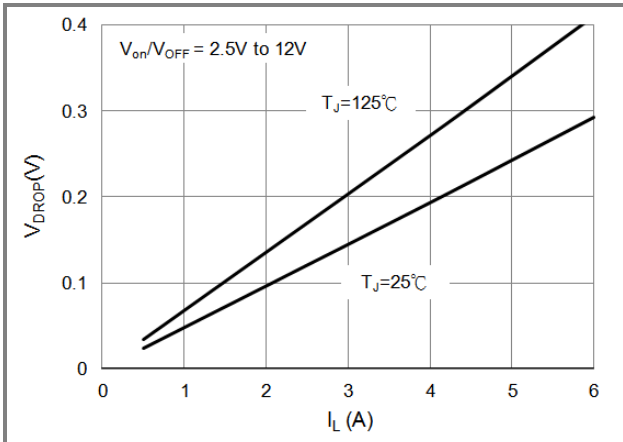


Fig.3 Vdrop vs Load Current at $V_{in} = 4.5V$

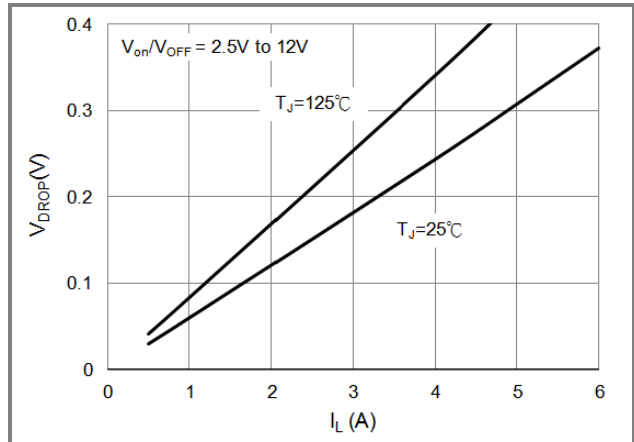


Fig.4 Vdrop vs Load Current at $V_{in} = 2.5V$

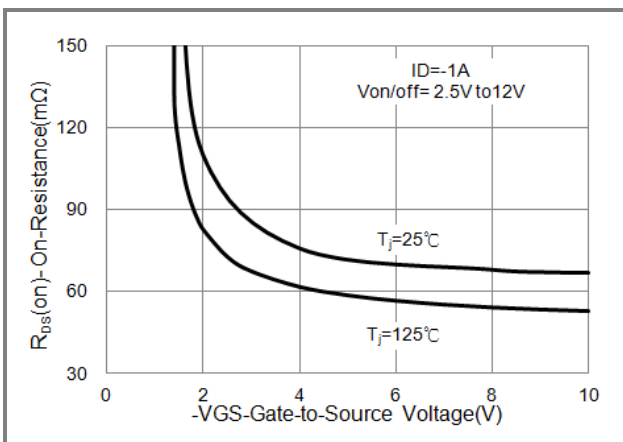


Fig.5 On-Resistance Variation with VGS.

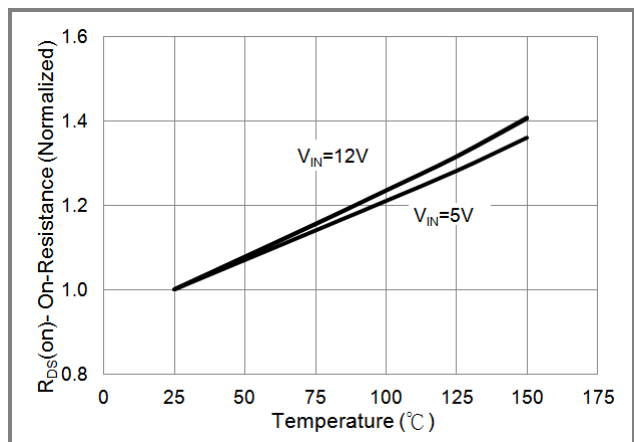


Fig.6 Normalize $R_{ds(on)}$ vs Junction Temperature



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TYPICAL CHARACTERISTIC CURVES

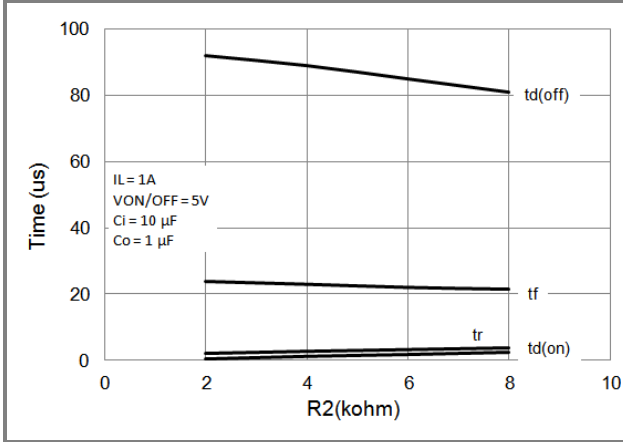


Fig.7 Switching Variation R2 at Vin=12V, R1=20kΩ

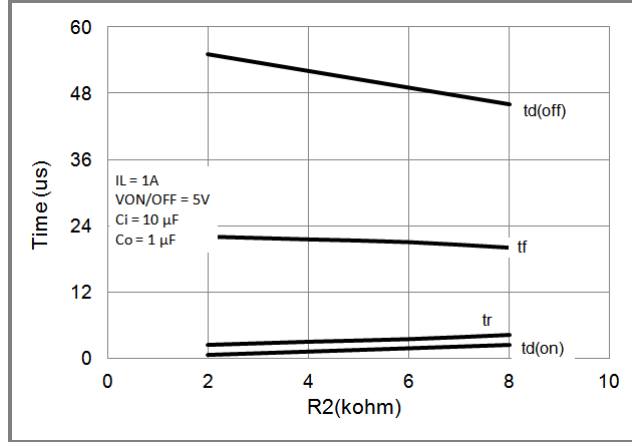


Fig.8 Switching Variation R2 at Vin= 5V, R1= 20kΩ

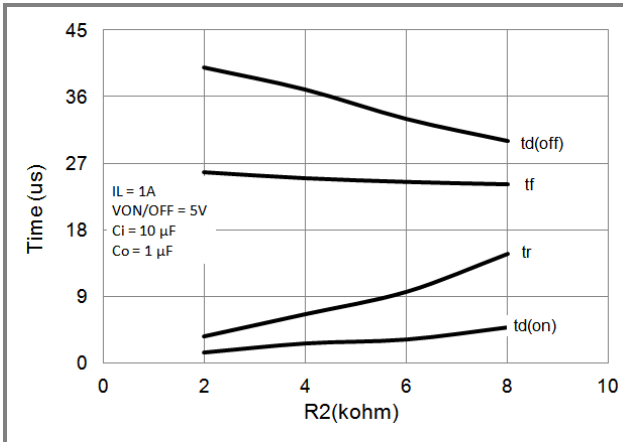


Fig.9 Switching Variation R2 at Vin=3.3V, R1=20kΩ

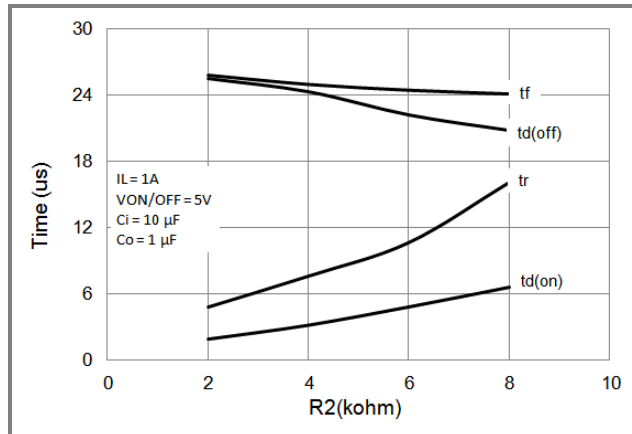


Fig.10 Switching Variation R2 at Vin=2.5V, R1=20kΩ

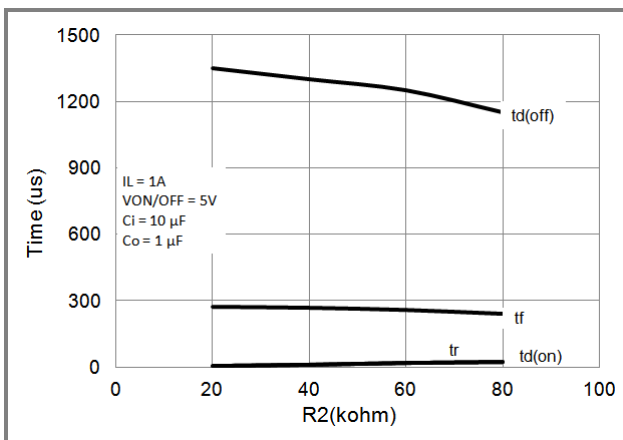


Fig.11 Switching Variation R2 at Vin=12V, R1=300k

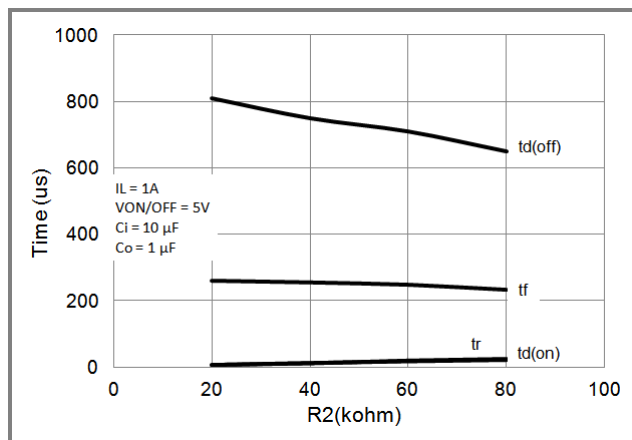


Fig.12 Switching Variation R2 at Vin=5V, R1=300k



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TYPICAL CHARACTERISTIC CURVES

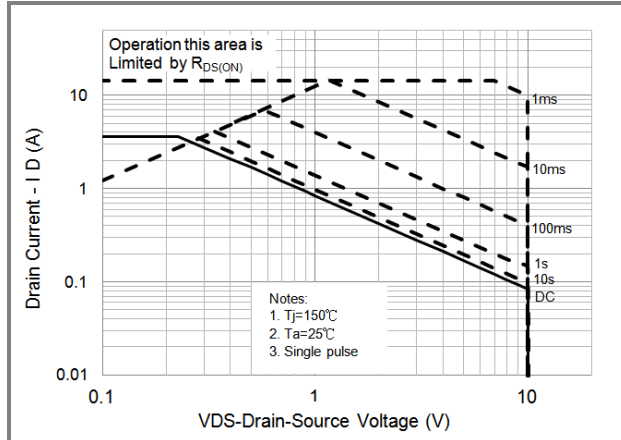


Fig.13 Switching Variation R2 at $V_{in}=12\text{V}$, $R_1=20\text{k}\Omega$

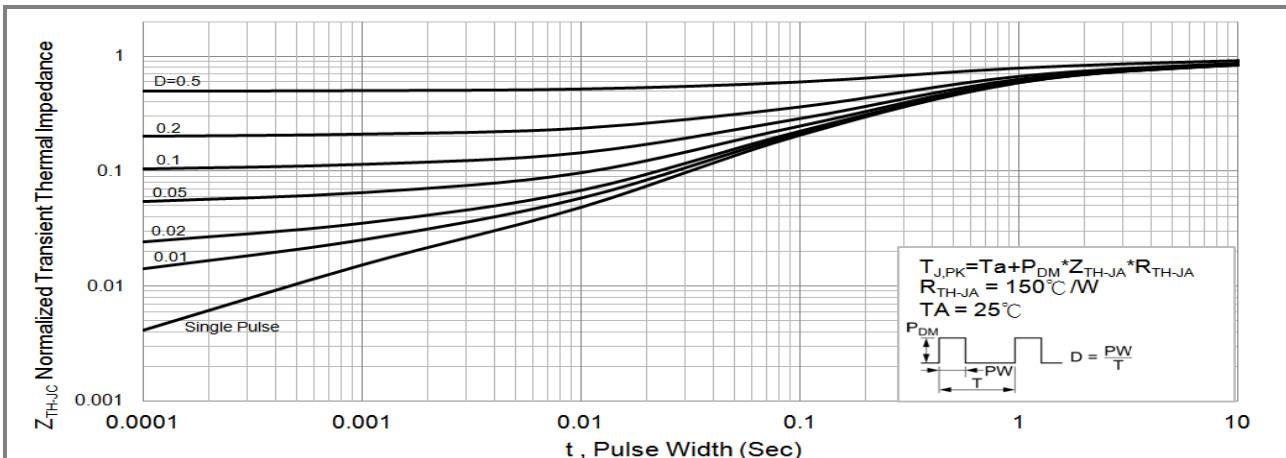


Fig.14 Transient Thermal Response Curve

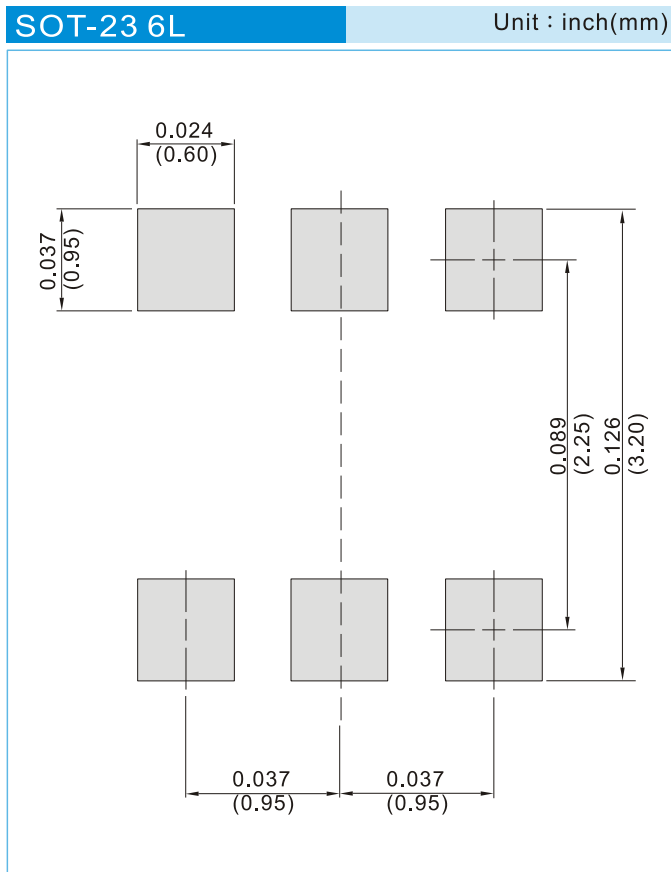


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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJS6630_S1_00001	SOT-23 6L	3K pcs / 7" reel	SL0	Halogen free
PJS6630_S2_00001	SOT-23 6L	10K pcs / 13" reel	SL0	Halogen free

MOUNTING PAD LAYOUT





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