



PJS6631

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

Voltage **20 V** **Current** **2.0A**

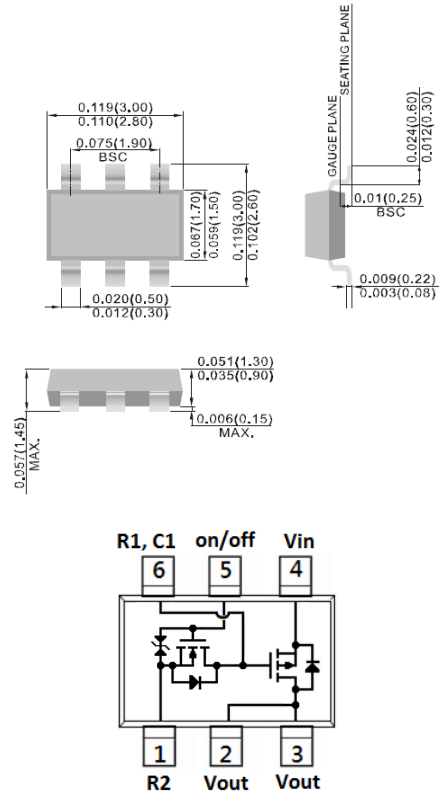
Features

- Vdrop = 0.2V@Vin=12V, IL=2.0A, RDS(ON)= 100mΩ
- Vdrop = 0.2V@Vin=5.0V, IL=1.8A, RDS(ON)= 110mΩ
- Vdrop = 0.2V@Vin=2.5V, IL=1.4A, RDS(ON)= 140mΩ
- 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: SL1

SOT-23 6L Unit : inch(mm)



Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	Ratings	UNITS
Input Voltage Range ^(Note 1)	V _{IN}	20	V
On/Off Voltage Range	V _{ON} /V _{OFF}	12	V
Continuous Load Current t ^(Note 2,3)	I _D	2	A
Pulsed Load Current ^(Note 4)	I _D	8	A
Power Dissipation ^(Note 2)	P _D	0.83	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C
ESD, MIL-STD-883D HBM (100pF/1.5kohm) (Von/off pin)	V _{ESD}	2	kV
Typical Junction to Ambient ^(Note 2)	R _{θJA}	150	°C/W



PJS6631

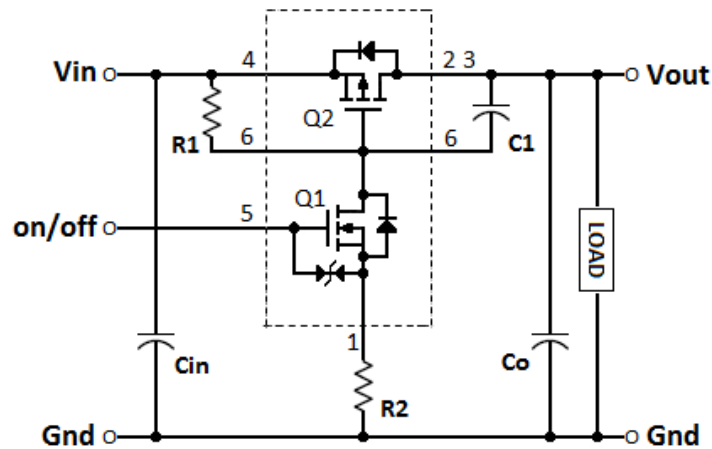
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

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)	$R_{DS(on)}$	$V_{GS}=-12V, I_D=-2.0A$	-	84	100	m Ω
		$V_{GS}=-5.0V, I_D=-1.8A$	-	90	110	
		$V_{GS}=-2.5V, I_D=-1.4A$	-	110	140	

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 $10 * R2$ to ensure Q1 turn-on		



PJS6631

TYPICAL CHARACTERISTIC CURVES

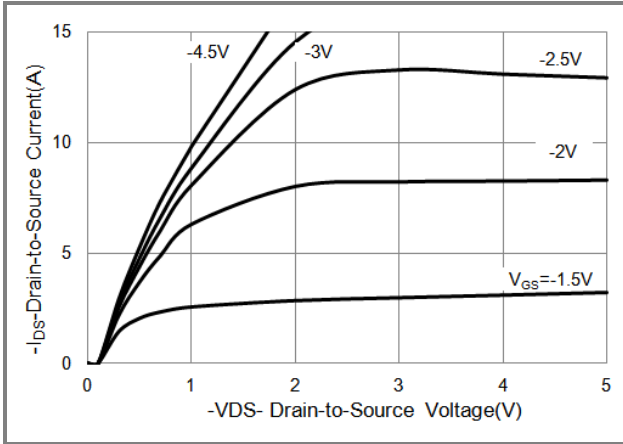


Fig.1 Output Characteristics

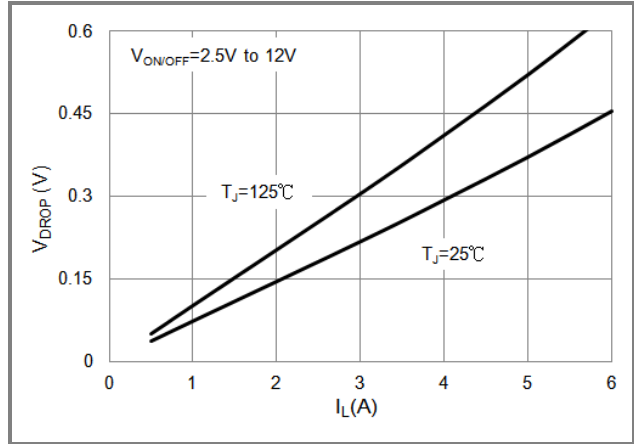


Fig.2 Vdrop vs Load Current at Vin= 12V

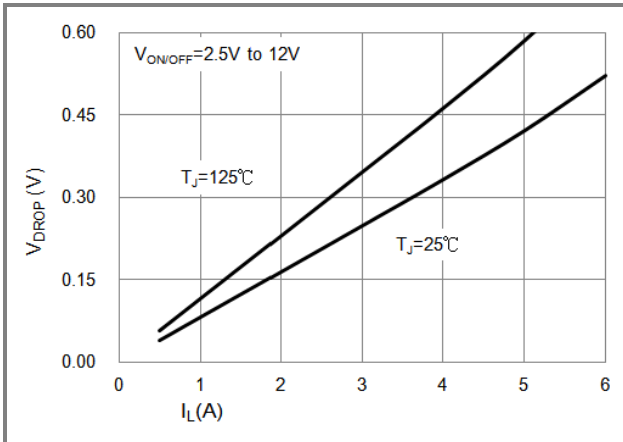


Fig.3 Vdrop vs Load Current at Vin= 4.5V

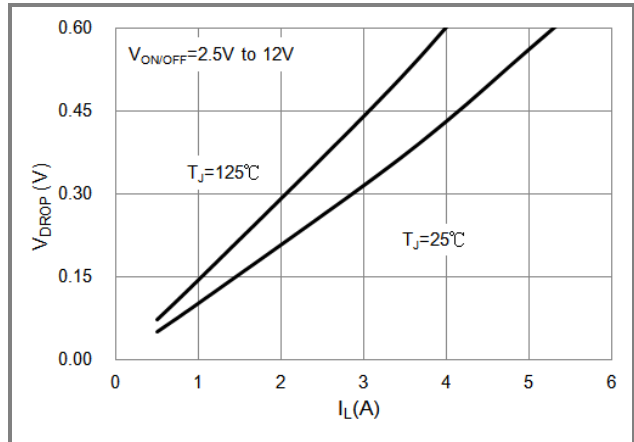


Fig.4 Vdrop vs Load Current at Vin= 2.5V

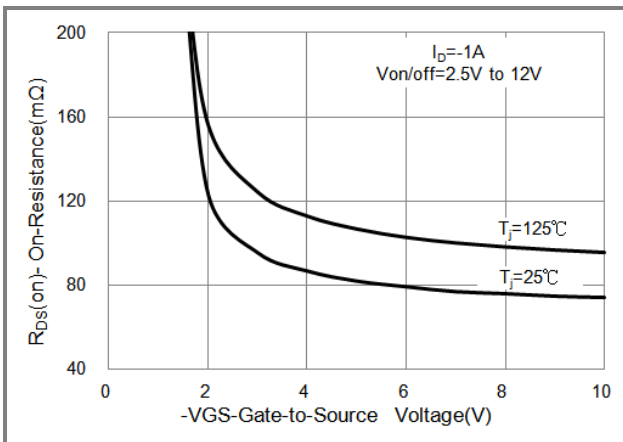


Fig.5 On-Resistance Variation with VGS.

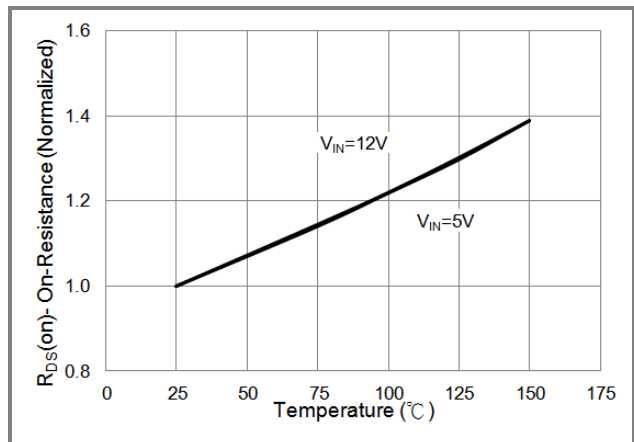


Fig.6 Normalize Rds(on) vs Junction Temperature



PJS6631

TYPICAL CHARACTERISTIC CURVES

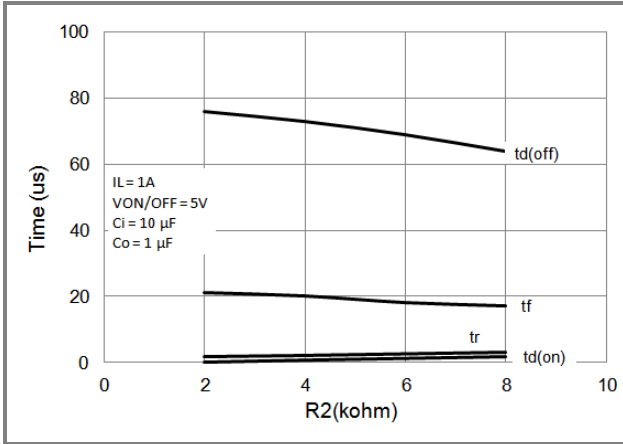


Fig.7 Switching Variation R2 at Vin=12V, R1=20k

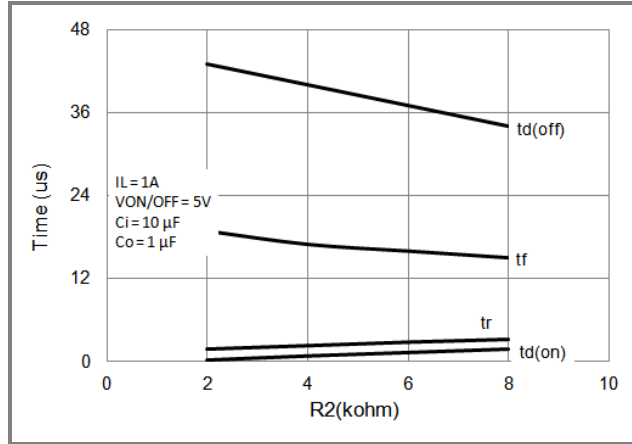


Fig.8 Switching Variation R2 at Vin=5V, R1=20k

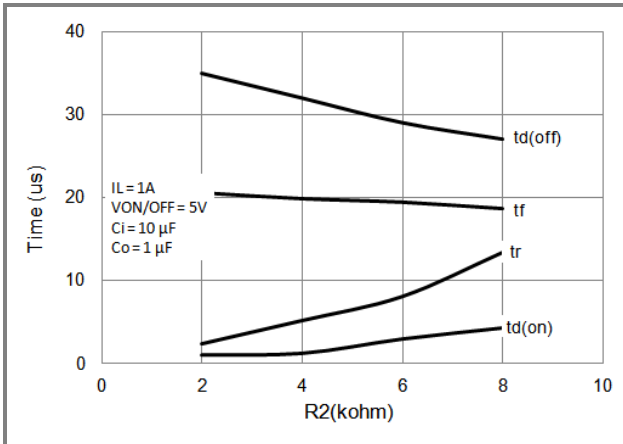


Fig.9 Switching Variation R2 at Vin=3.3V, R1=20k

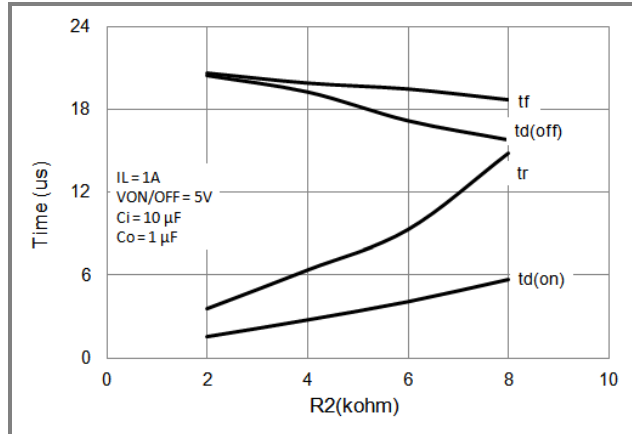


Fig.10 Switching Variation R2 at Vin=2.5V, R1=20k

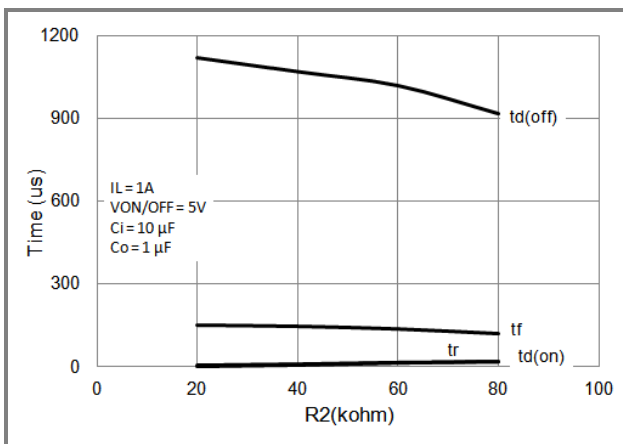


Fig.11 Switching Variation R2 at Vin=12V, R1=300k

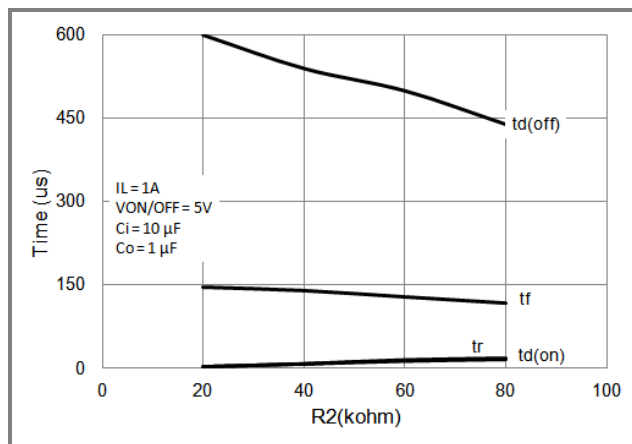


Fig.12 Switching Variation R2 at Vin=5V, R1=300k



PJS6631

TYPICAL CHARACTERISTIC CURVES

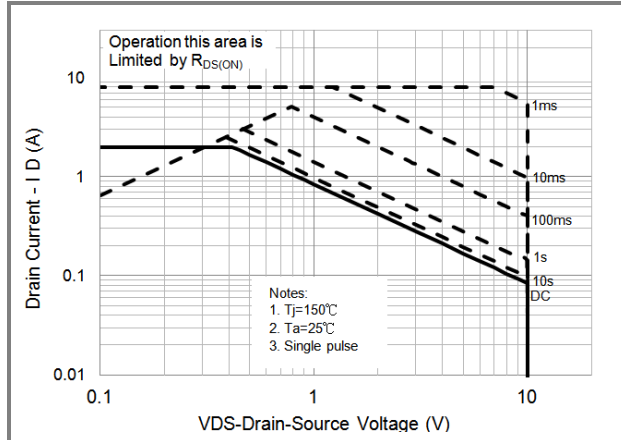


Fig.13 Switching Variation R2 at $V_{in}=12\text{V}$, $R_1=20\text{k}\Omega$

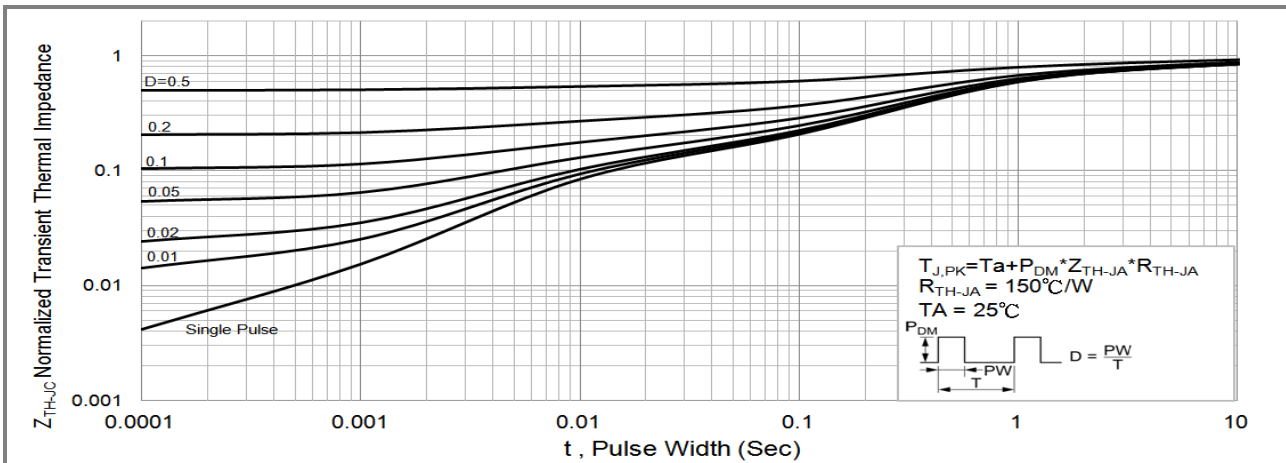


Fig.14 Transient Thermal Response Curve

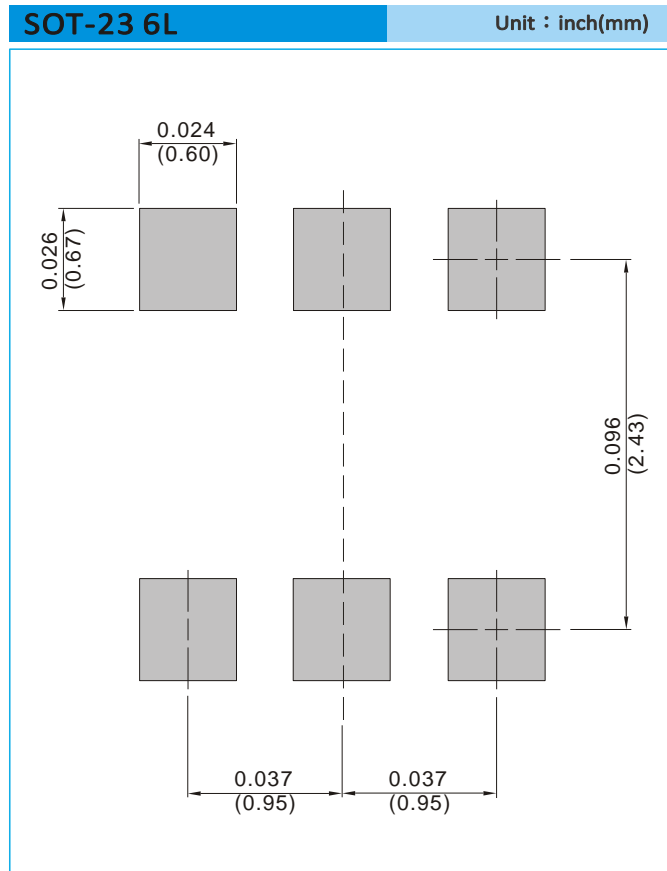


PJS6631

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJS6631_S1_00001	SOT-23 6L	3K pcs / 7" reel	SL1	Halogen free
PJS6631_S2_00001	SOT-23 6L	10K pcs / 13" reel	SL1	Halogen free

MOUNTING PAD LAYOUT





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