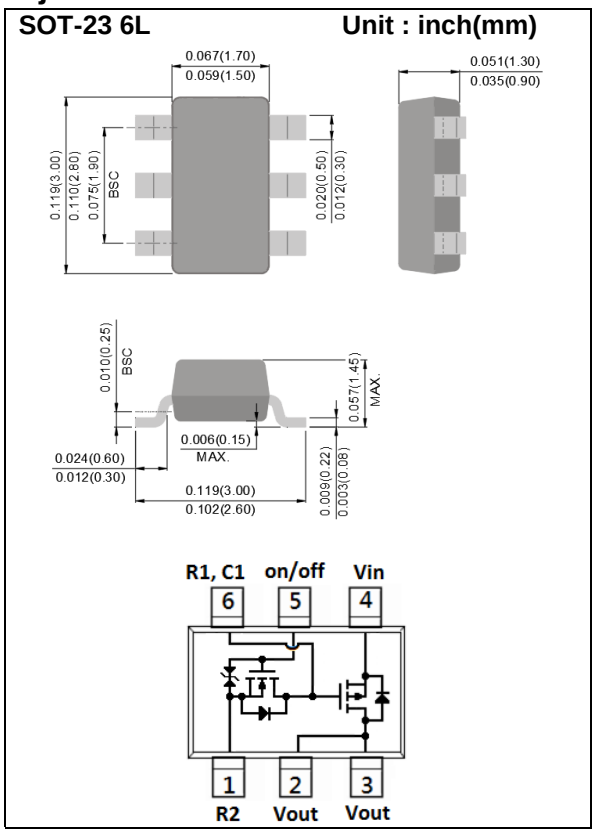
PJS6631

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, $R_{DS(ON)}$= 100mΩ
- Vdrop = 0.2V@Vin=5.0V, IL=1.8A, $R_{DS(ON)}$= 110mΩ
- Vdrop = 0.2V@Vin=2.5V, IL=1.4A, $R_{DS(ON)}$= 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 2.0
- Green molding compound as per IEC 61249 standard

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

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)	$R_{\theta JA}$	150	°C/W

PJS6631

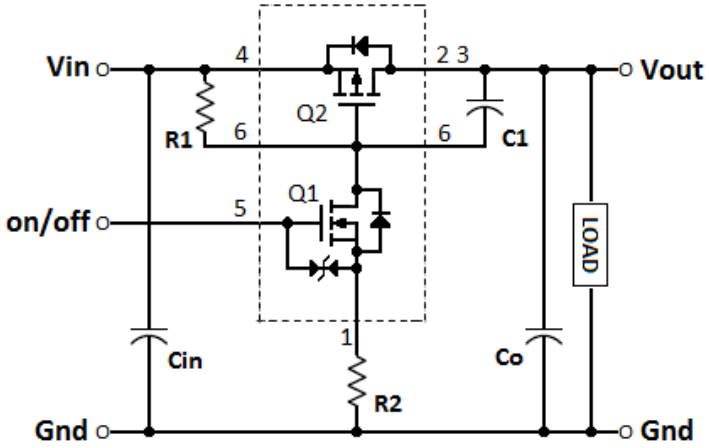
Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Off Characteristics						
Leakage Current	I_{FL}	V_{IN}=20V, V_{ON}/V_{OFF}=0V	-	-	1	uA
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 (Q2)	$R_{DS(on)}$	V_{GS}=-12V, I_D=-2.0A	-	84	100	mΩ
		V_{GS}=-5.0V, I_D=-1.8A	-	90	110	
		V_{GS}=-2.5V, I_D=-1.4A	-	110	140	

NOTES :

1. V_{IN} Range can be up to 20V, but R1 and R2 must be scaled such that V_{GS} do not exceed 12V.
2. $R_{\Theta JA}$ 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
3. The maximum current rating is package limited
4. Pulse test: pulse width ≤ 300uS, duty cycle ≤ 2%

Application Circuits



Component Table		
R1	Pull-Up Resistor	Typical 10kΩ to 1MΩ
R2	Optional Slew-Rate Control	Typical 0kΩ to 100kΩ
C1	Optional Slew-Rate Control	Typical 1uF
Note: R1 should be at least 10 * R2 to ensure Q1 turn-on		

PJS6631

TYPICAL CHARACTERISTIC CURVES

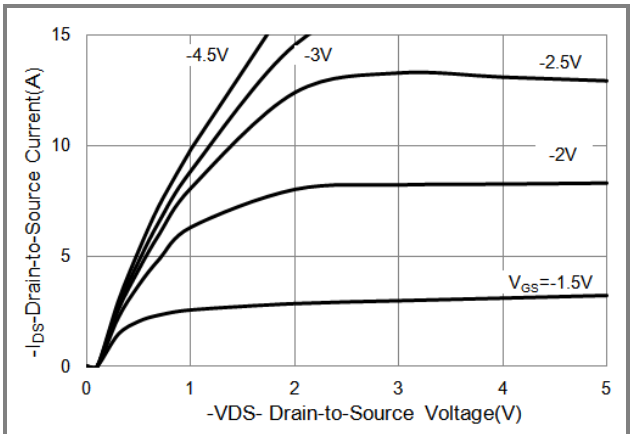


Fig.1 Output Characteristics

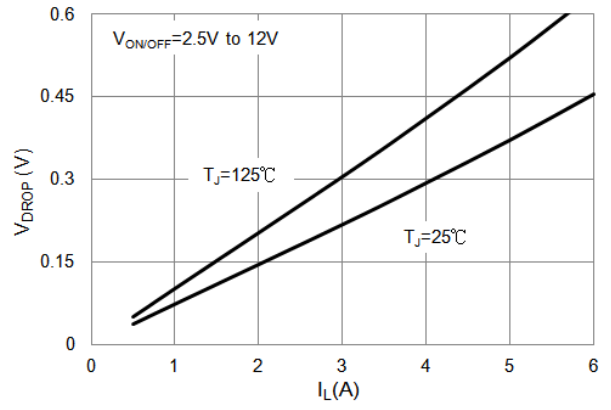


Fig.2 Vdrop vs Load Current at Vin= 12V

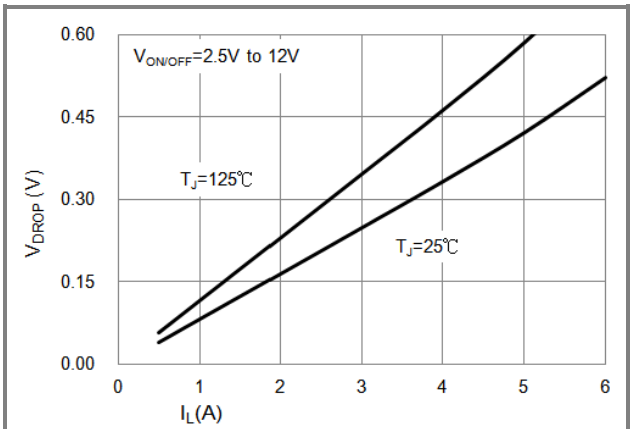


Fig.3 Vdrop vs Load Current at Vin= 4.5V

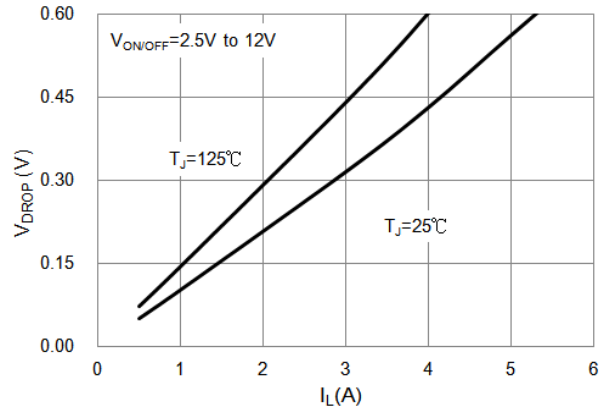


Fig.4 Vdrop vs Load Current at Vin= 2.5V

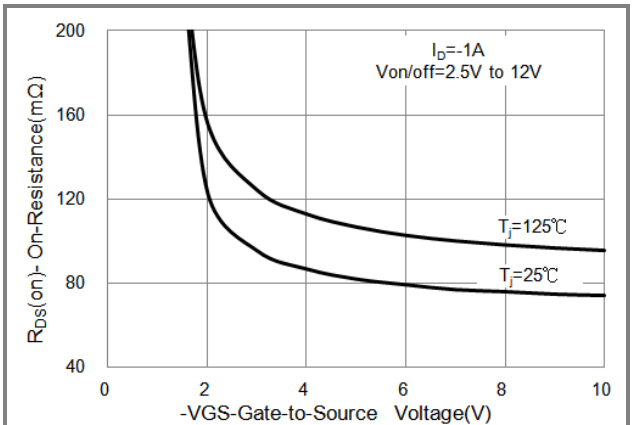


Fig.5 On-Resistance Variation with VGS.

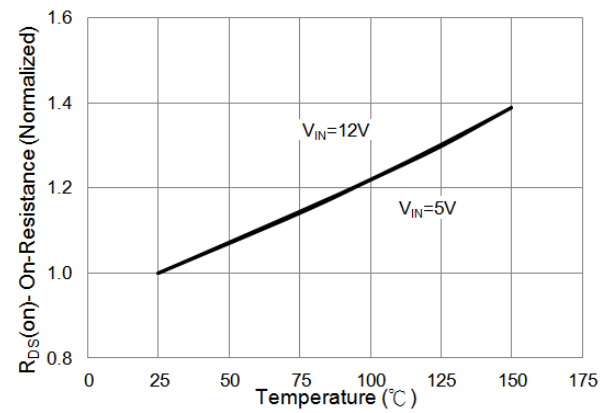


Fig.6 Normalize Rds(on) vs Junction Temperature

PJS6631

TYPICAL CHARACTERISTIC CURVES

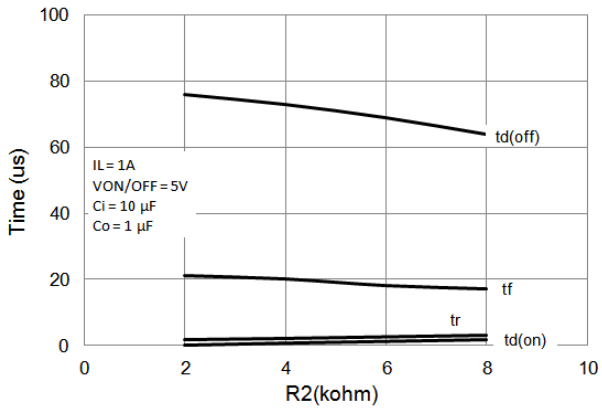


Fig.7 Switching Variation R2 at Vin=12V, R1=20k

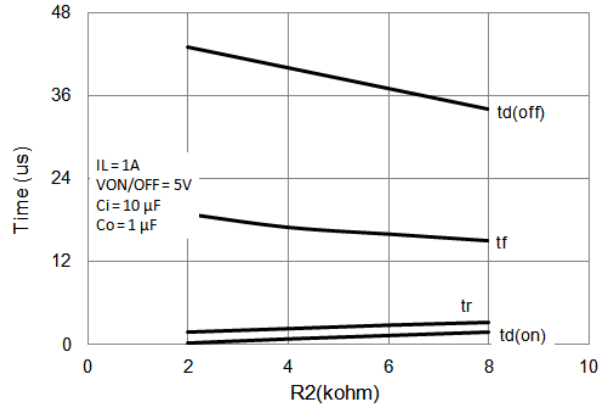


Fig.8 Switching Variation R2 at Vin= 5V, R1= 20k

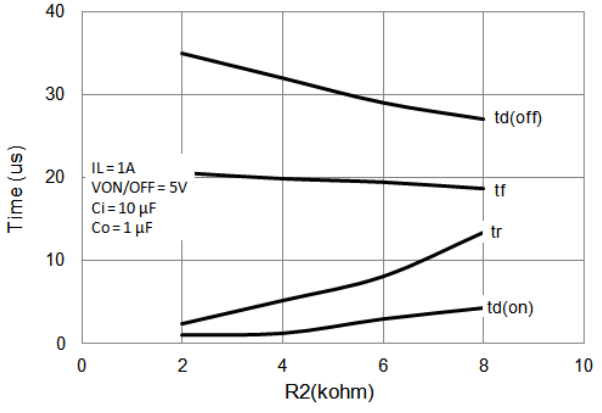


Fig.9 Switching Variation R2 at Vin=3.3V, R1=20k

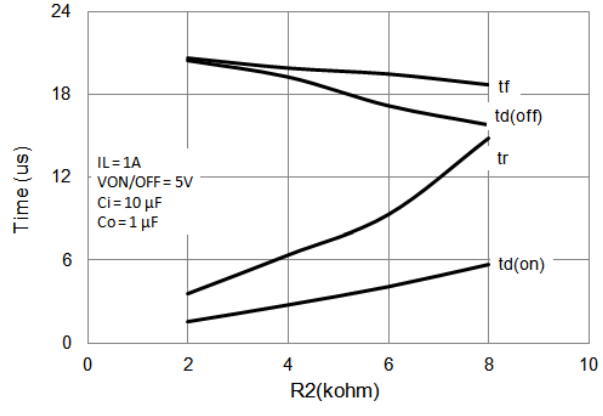


Fig.10 Switching Variation R2 at Vin=2.5V, R1=20k

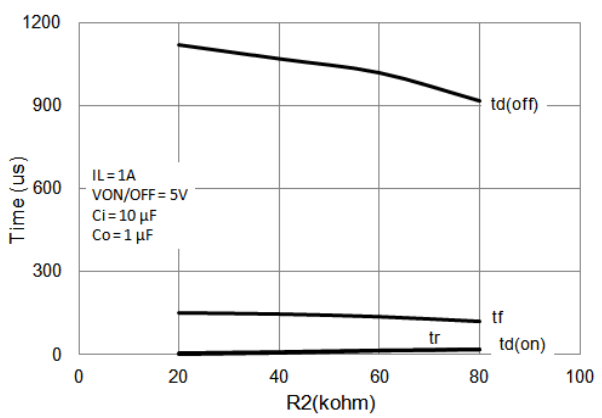


Fig.11 Switching Variation R2 at Vin=12V, R1=300k

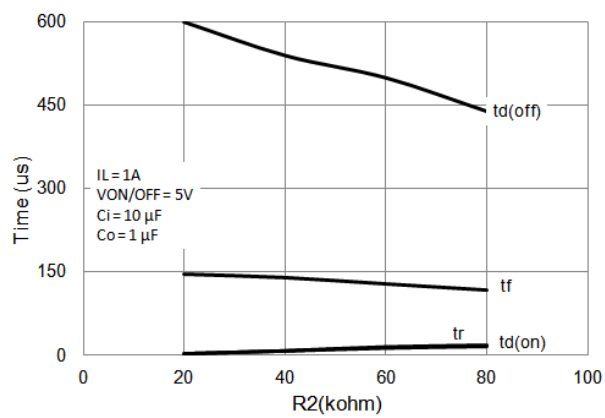


Fig.12 Switching Variation R2 at Vin=5V, R1=300k

PJS6631

TYPICAL CHARACTERISTIC CURVES

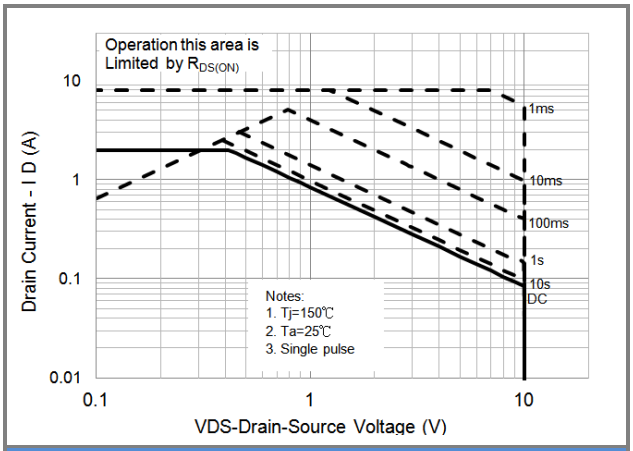


Fig.13 Switching Variation R2 at Vin=12V, R1=20kΩ

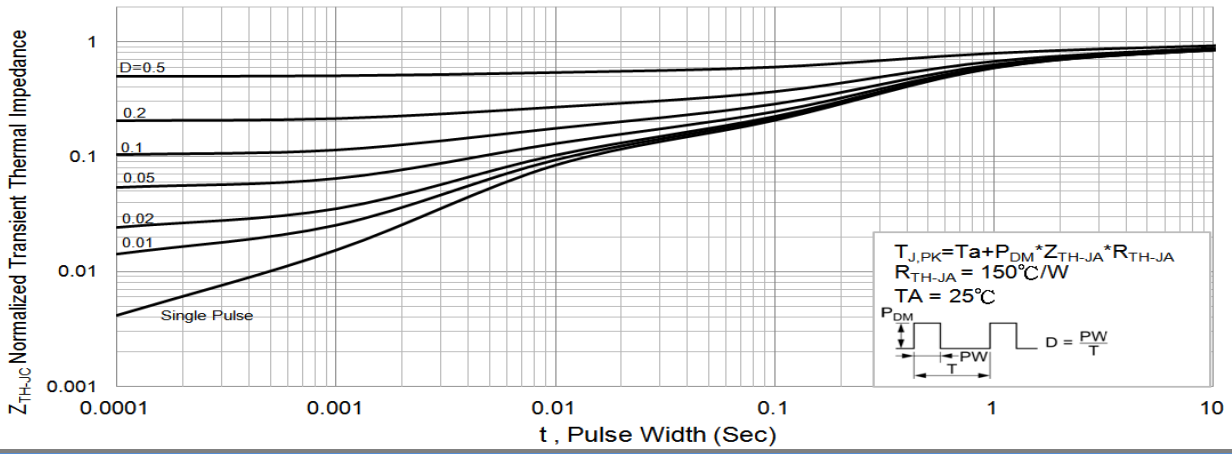


Fig.14 Transient Thermal Response Curve

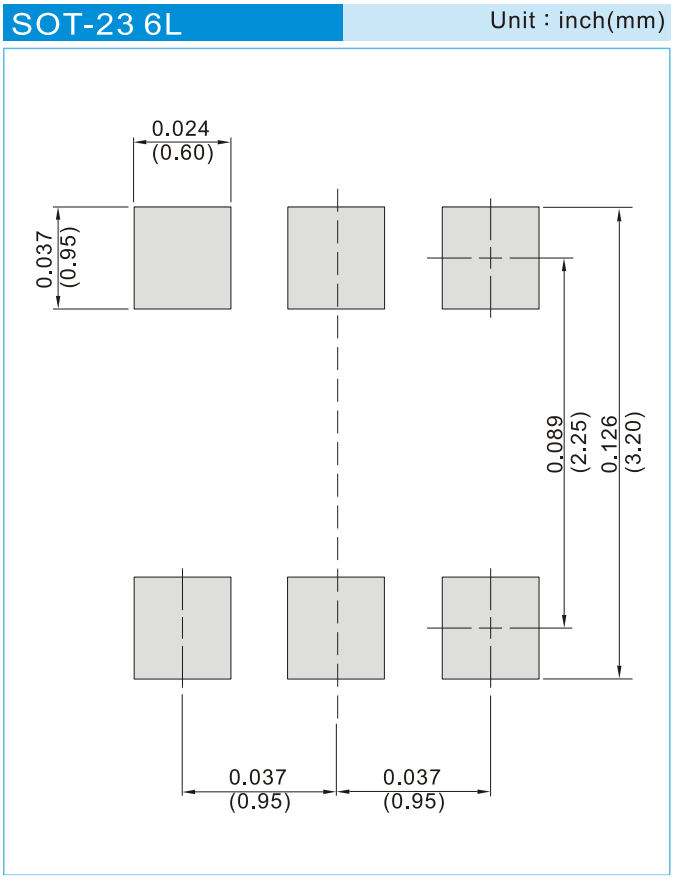
PJS6631

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 RoHS compliant
PJS6631_S2_00001	SOT-23 6L	10K pcs / 13” reel	SL1	Halogen free RoHS compliant

MOUNTING PAD LAYOUT

SOT-23 6L Unit : inch(mm)



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