



# PJT7802

## 20V N-Channel Enhancement Mode MOSFET – ESD Protected

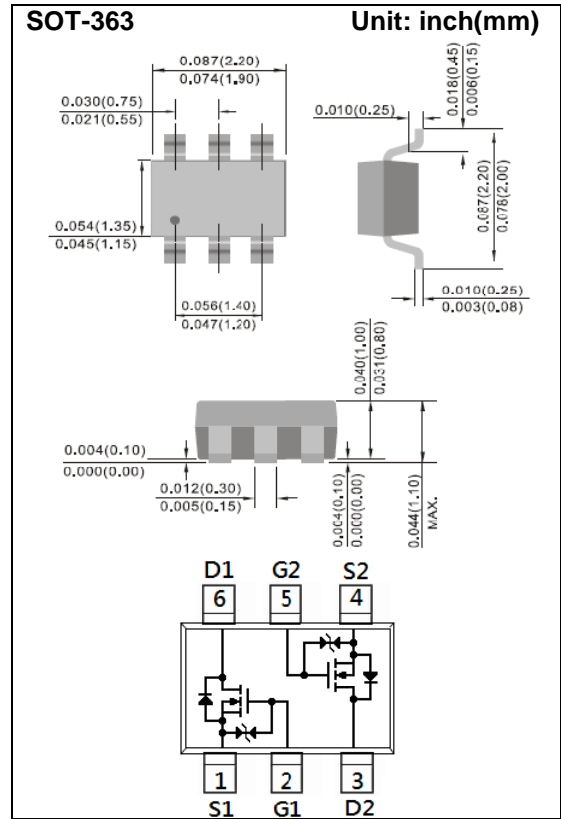
**Voltage**    **20 V**    **Current**    **0.5A**

### Features

- RDS(ON) , VGS@4.5V, ID@0.5A<0.4Ω
- RDS(ON) , VGS@2.5V, ID@0.3A<0.7Ω
- RDS(ON) , VGS@1.8V, ID@0.1A<1.2Ω(typ.)
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std.(Halogen Free)

### Mechanical Data

- Case : SOT-363 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0002 ounces, 0.006 grams
- Marking : T02



### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Continuous Drain Current	I <sub>D</sub>	0.5	A
Pulsed Drain Current (Note 4)	I <sub>DM</sub>	2.0	A
Power Dissipation	P <sub>D</sub>	T <sub>a</sub> =25°C	350
		Derate above 25°C	2.8
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
Typical Thermal resistance	R <sub>θJA</sub>	357	°C/W
- Junction to Ambient (Note 3)			



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## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.4	0.63	1.0	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A	-	0.32	0.4	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.3A	-	0.6	0.7	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =0.1A	-	1.2	-	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V	-	0.02	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	±2	±10	uA
<b>Dynamic (Note 5)</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A, V <sub>GS</sub> =4.5V (Note 1,2)	-	0.9	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.1	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1.0MHZ	-	39	-	pF
Output Capacitance	C <sub>oss</sub>		-	18	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	9	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =0.5A, V <sub>GS</sub> =4.5V, R <sub>G</sub> =6Ω (Note 1,2)	-	3	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	22	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	7	-	
Turn-Off Fall Time	t <sub>f</sub>		-	19	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	0.4	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =0.5A, V <sub>GS</sub> =0V	-	0.91	1.3	V

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. R<sub>ΘJA</sub> 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
4. The maximum current rating is package limited
5. Guaranteed by design, not subject to production testing



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## TYPICAL CHARACTERISTIC CURVES

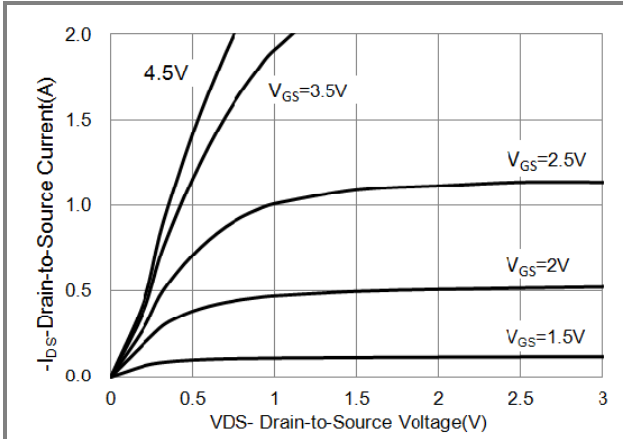


Fig.1 On-Region Characteristics

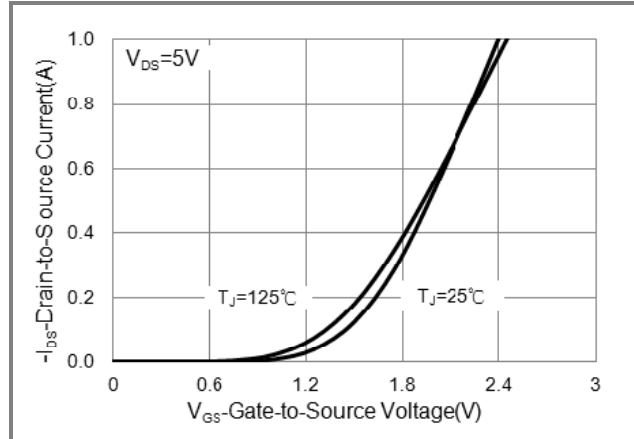


Fig.2 Transfer Characteristics

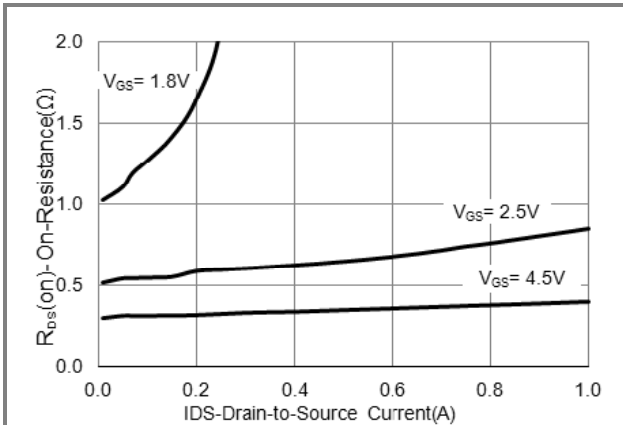


Fig.3 On-Resistance vs. Drain Current

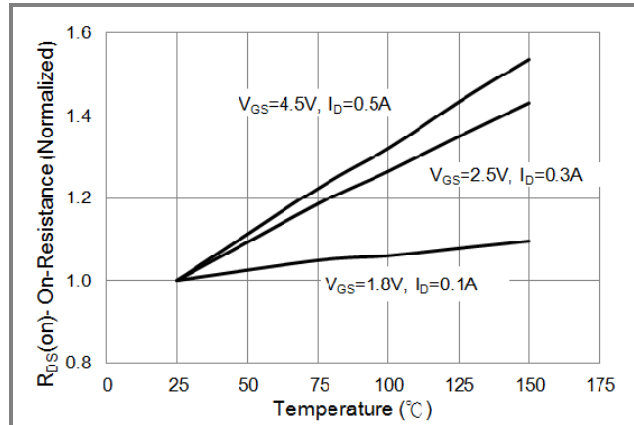


Fig.4 On-Resistance vs. Junction temperature

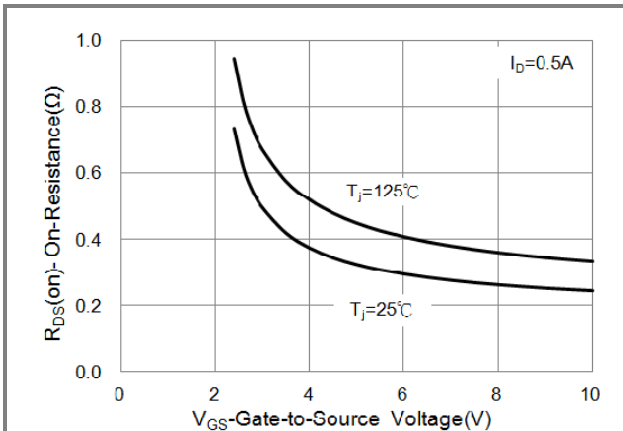


Fig.5 On-Resistance Variation with V\_GS.

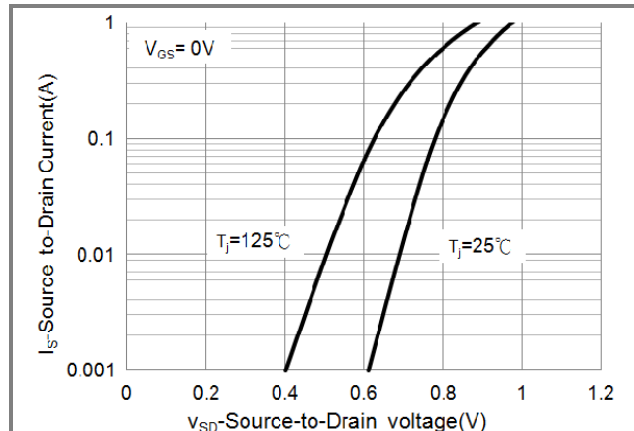


Fig.6 Body Diode Characteristics



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## TYPICAL CHARACTERISTIC CURVES

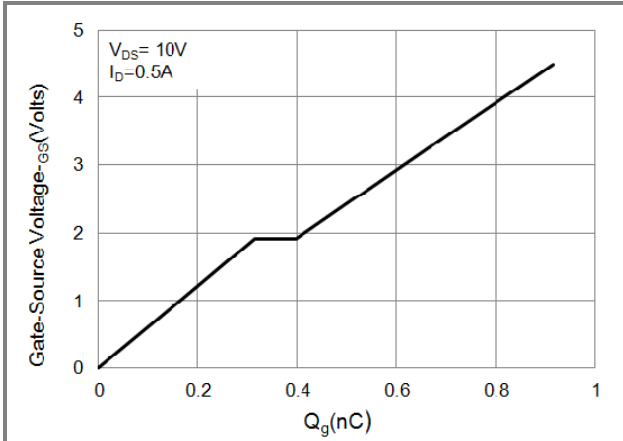


Fig.7 Gate-Charge Characteristics

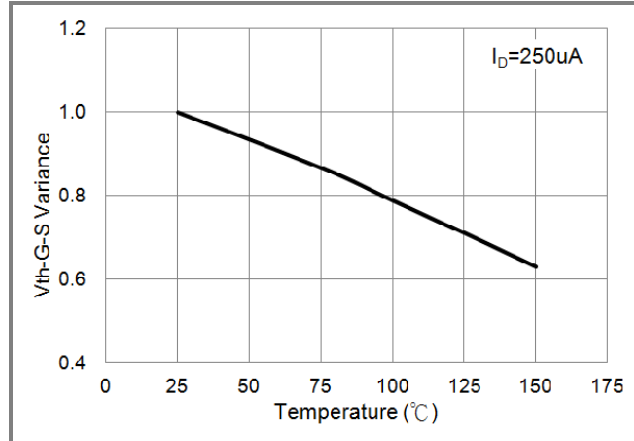


Fig.8 Threshold Voltage Variation with Temperature.

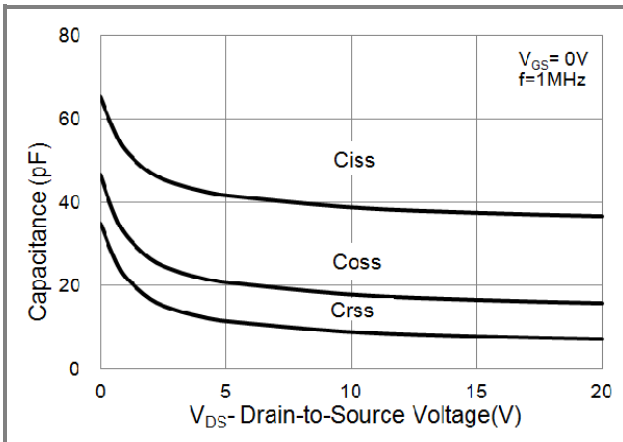


Fig.9 Threshold Voltage Variation with Temperature.

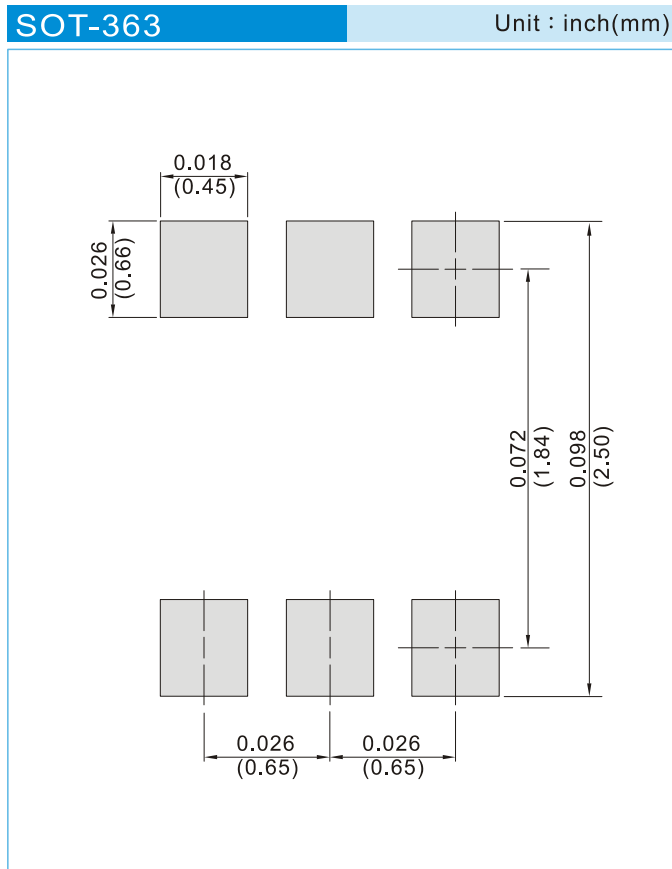


# PJT7802

## PART NO. PACKING CODE VERSION

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJT7802_R1_00001	SOT-363	3K pcs / 7" reel	T02	Halogen free
PJT7802_R2_00001	SOT-363	10K pcs / 13" reel	T02	Halogen free

## MOUNTING PAD LAYOUT





## PJT7802

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