



PJT7812

30V N-Channel Enhancement Mode MOSFET – ESD Protected

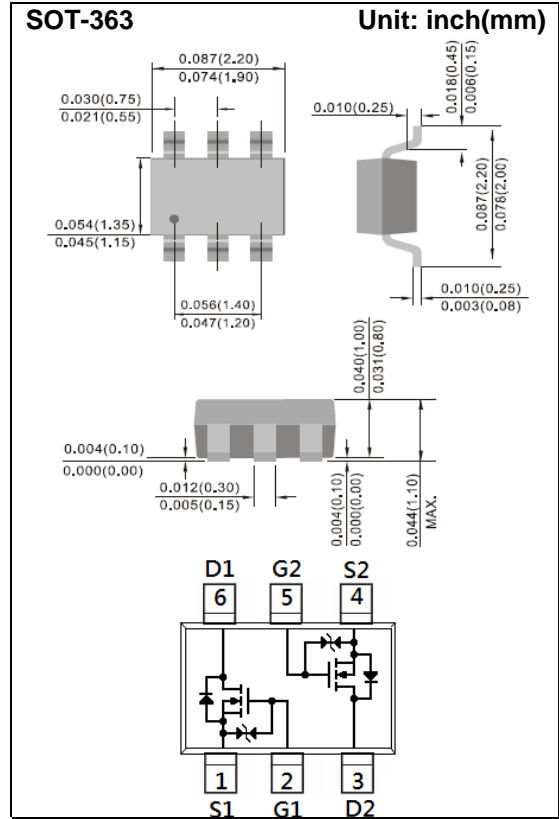
Voltage 30 V **Current** 500mA

Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@500mA < 1.2\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@200mA < 1.6\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@100mA < 2.3\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.5V$, $I_D@10mA < 2.3\Omega$ (typ.)
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- 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: T12



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	500	mA
Pulsed Drain Current ^(Note 4)	I_{DM}	1500	mA
Power Dissipation	$T_a=25^\circ C$	350	mW
	Derate above $25^\circ C$	2.8	mW/ $^\circ C$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Typical Thermal resistance - Junction to Ambient ^(Note 3)	$R_{\theta JA}$	357	$^\circ C/W$



PJT7812

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.85	1.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=500mA$	-	0.87	1.2	Ω
		$V_{GS}=2.5V, I_D=200mA$	-	1.25	1.6	
		$V_{GS}=1.8V, I_D=100mA$	-	1.6	2.3	
		$V_{GS}=1.5V, I_D=10mA$	-	2.3	-	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	0.01	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	± 10	
		$V_{GS}=\pm 5V, V_{DS}=0V$	-	-	± 1	
Dynamic (Note 5)						
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=500mA,$ $V_{GS}=4.5V$ (Note 1,2)	-	0.87	-	nC
Gate-Source Charge	Q_{gs}		-	0.26	-	
Gate-Drain Charge	Q_{gd}		-	0.16	-	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	34	-	pF
Output Capacitance	C_{oss}		-	8.9	-	
Reverse Transfer Capacitance	C_{rss}		-	2.5	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=80mA,$ $V_{GS}=4.0V,$ $R_G=6\Omega$ (Note 1,2)	-	7.1	-	ns
Turn-On Rise Time	t_r		-	20	-	
Turn-Off Delay Time	$t_{d(off)}$		-	41	-	
Turn-Off Fall Time	t_f		-	31	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	500	mA
Diode Forward Voltage	V_{SD}	$I_S=500mA, V_{GS}=0V$	-	0.88	1.3	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ 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.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.



PJT7812

TYPICAL CHARACTERISTIC CURVES

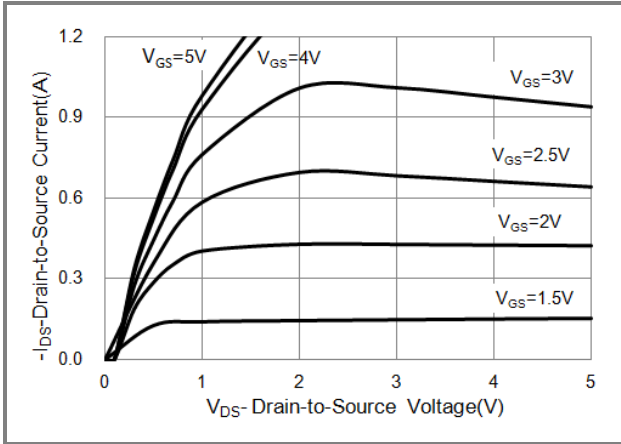


Fig.1 On-Region Characteristics

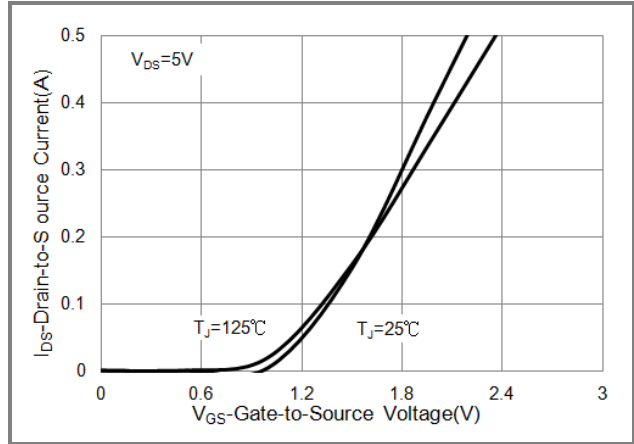


Fig.2 Transfer Characteristics

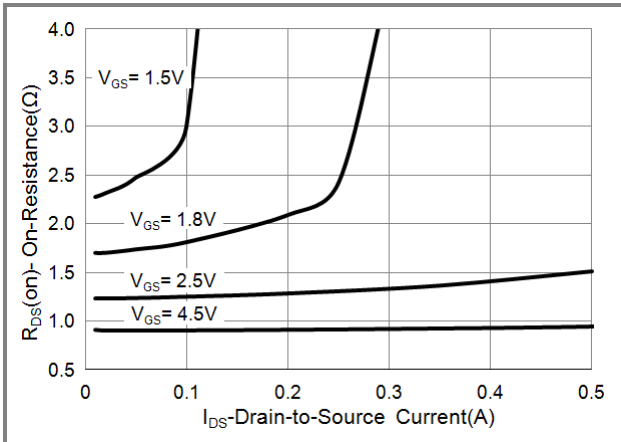


Fig.3 On-Resistance vs. Drain Current

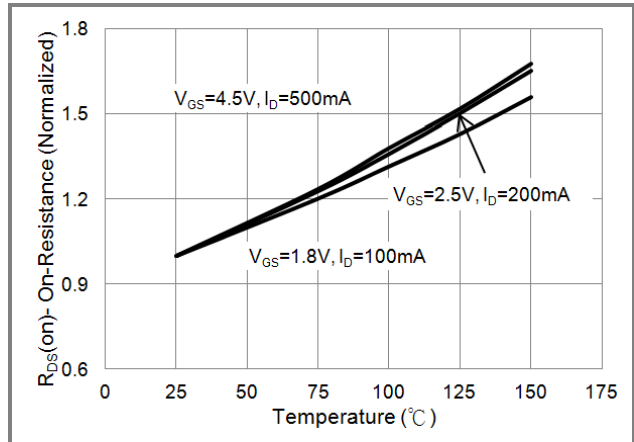


Fig.4 On-Resistance vs. Junction temperature

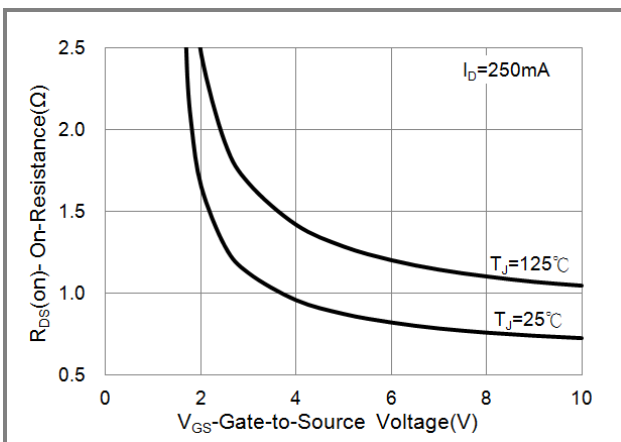


Fig.5 On-Resistance Variation with V_{GS} .

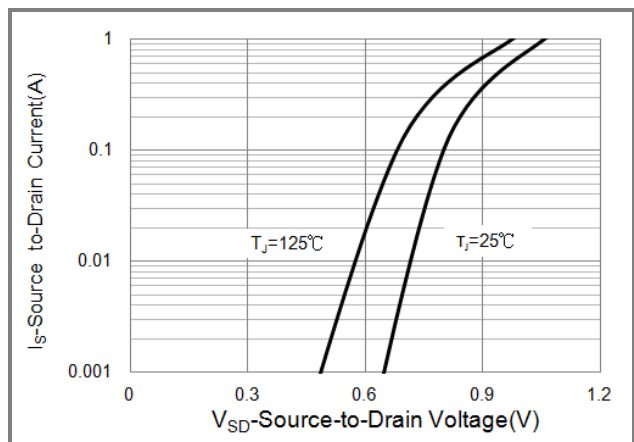


Fig.6 Body Diode Characteristics



PJT7812

TYPICAL CHARACTERISTIC CURVES

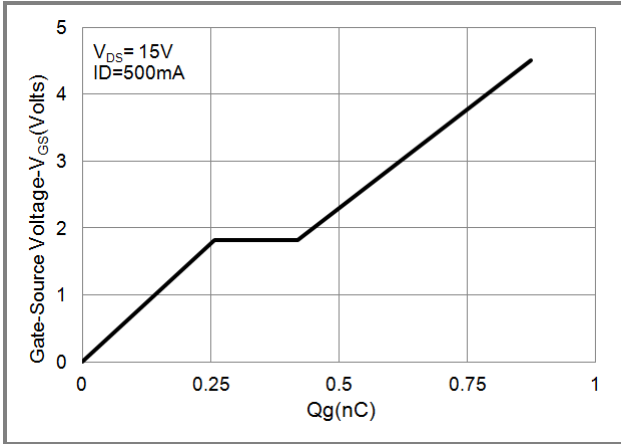


Fig.7 Gate-Charge Characteristics

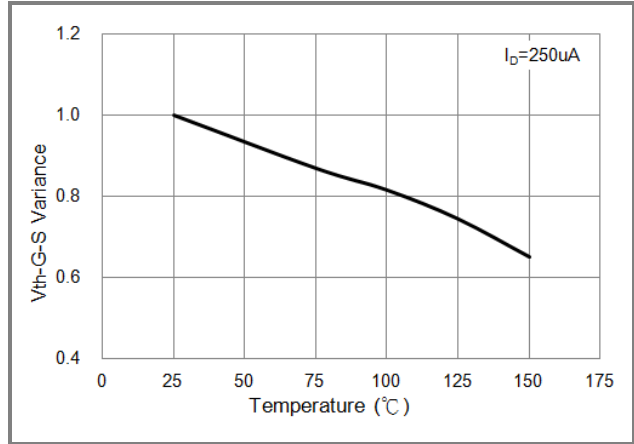


Fig.8 Threshold Voltage Variation with Temperature.

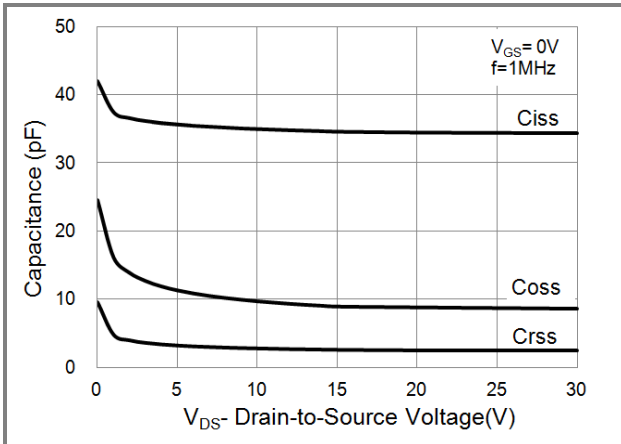


Fig.9 Capacitance vs. Drain-Source Voltage.

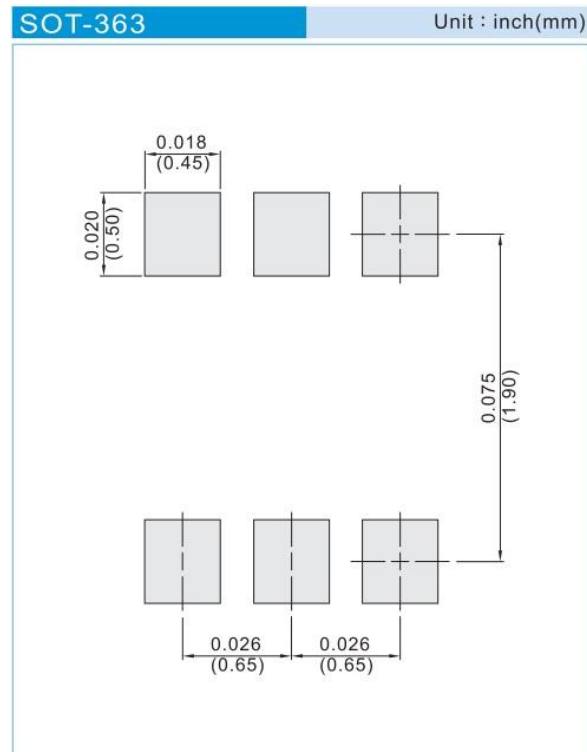


PJT7812

PART NO PACKING CODE VERSION

PART NO PACKING CODE	Package Type	Packing type	Marking	Version
PJT7812_R1_00001	SOT-363	3K pcs / 7" reel	T12	Halogen free
PJT7812_R2_00001	SOT-363	12K pcs / 13" reel	T12	Halogen free

MOUNTING PAD LAYOUT





PJT7812

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.