



PJE8412

30V N-Channel Enhancement Mode MOSFET – ESD Protected

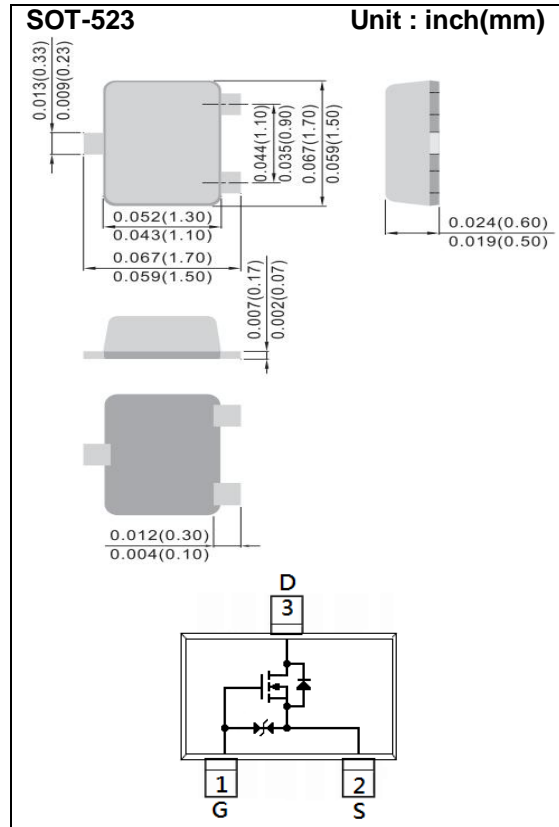
Voltage 30 V **Current** 350mA

Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@350mA < 1.2\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@200mA < 1.6\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@80mA < 2.3\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.5V$, $I_D@10mA < 2.5\Omega$ (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-523 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00007 ounces, 0.002 grams
- Marking: E12



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ 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	350	mA	
Pulsed Drain Current	I_{DM}	1400	mA	
Power Dissipation	P_D	$T_a=25^\circ\text{C}$	300	mW
		Derate above 25°C	2.4	mW/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$	
Typical Thermal resistance	$R_{\theta JA}$	417	$^\circ\text{C/W}$	
- Junction to Ambient (Note 3)				



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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	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=350mA$	-	0.94	1.2	Ω
		$V_{GS}=2.5V, I_D=200mA$	-	1.32	1.6	
		$V_{GS}=1.8V, I_D=80mA$	-	1.82	2.3	
		$V_{GS}=1.5V, I_D=10mA$	-	2.5	-	
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	$V_{DS}=15V, I_D=350mA,$ $V_{GS}=4.5V$ (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	-	μF
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	---	-	-	350	mA
Diode Forward Voltage	V_{SD}	$I_S=350mA, V_{GS}=0V$	-	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.



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TYPICAL CHARACTERISTIC CURVES

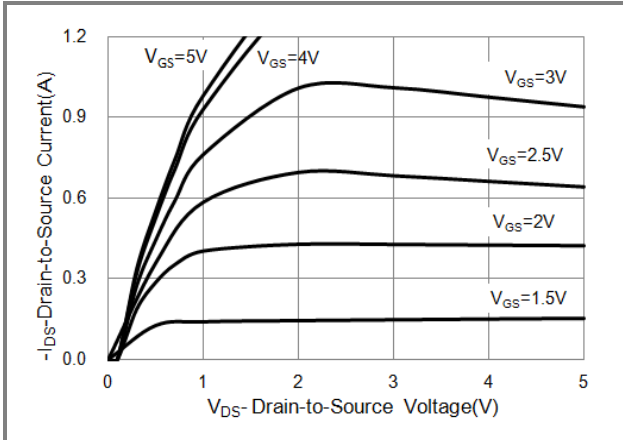


Fig.1 On-Region Characteristics

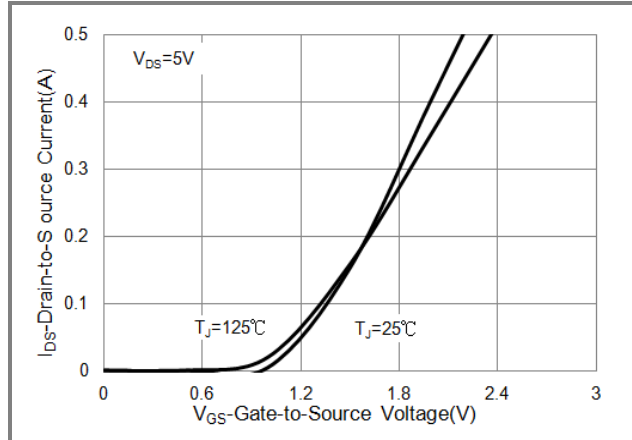


Fig.2 Transfer Characteristics

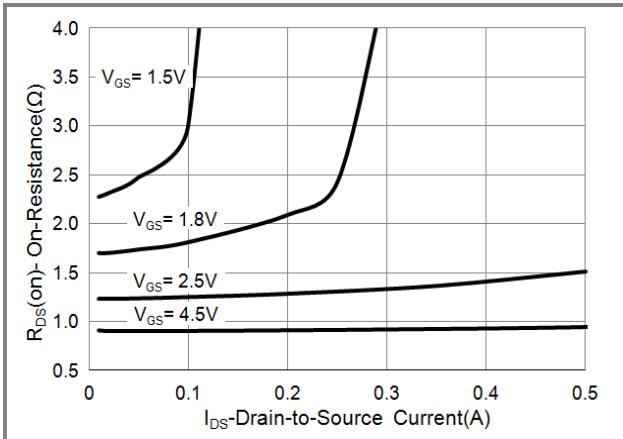


Fig.3 On-Resistance vs. Drain Current

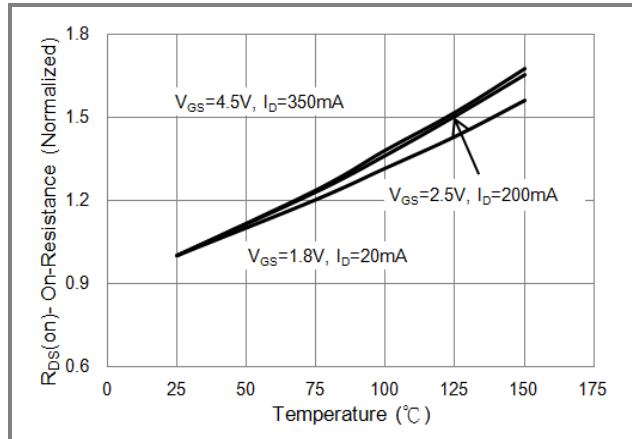


Fig.4 On-Resistance vs. Junction temperature

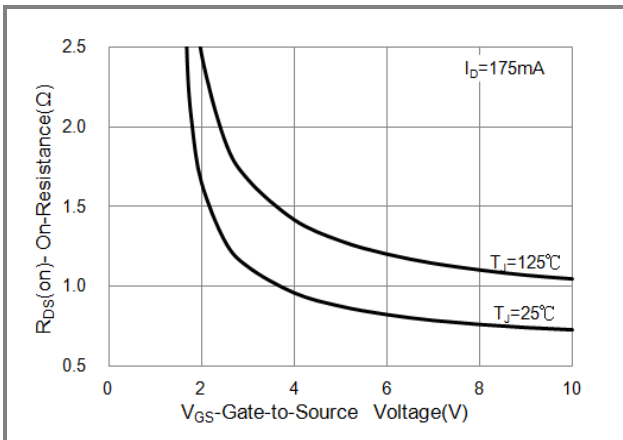


Fig.5 On-Resistance Variation with V_GS.

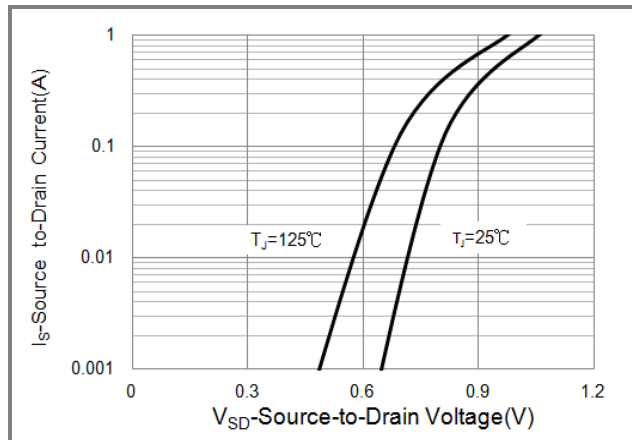


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

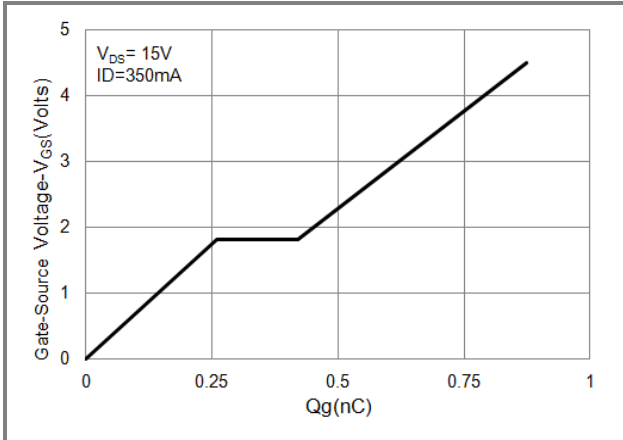


Fig.7 Gate-Charge Characteristics

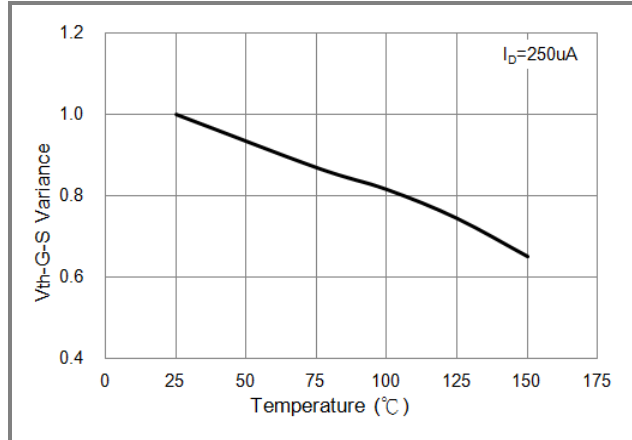


Fig.8 Threshold Voltage Variation with Temperature.

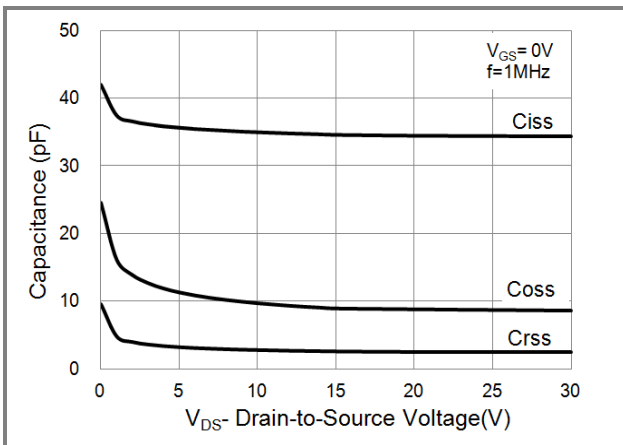


Fig.9 Capacitance vs. Drain-Source Voltage.

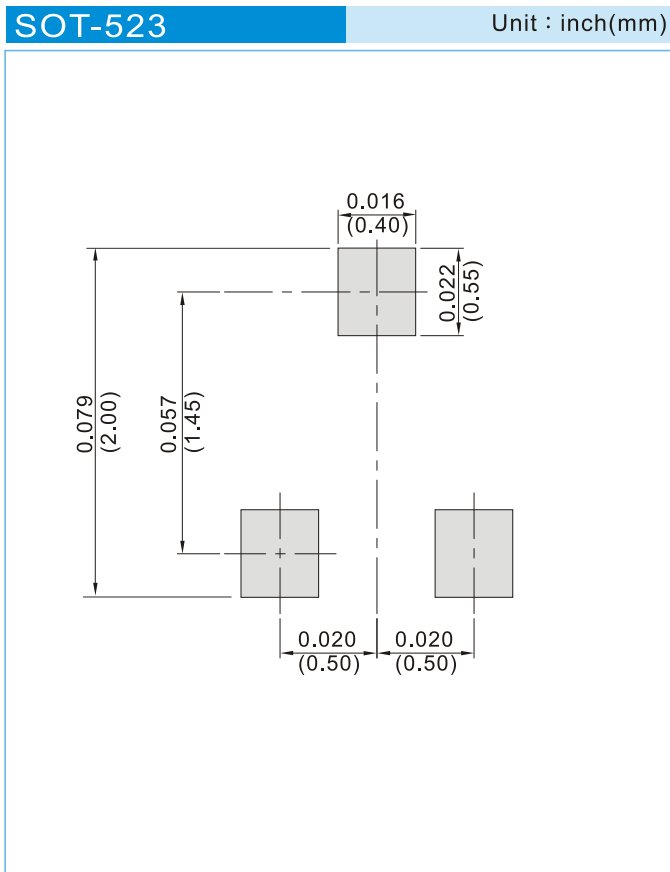


PJE8412

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJE8412_R1_00001	SOT-523	4K pcs / 7" reel	E12	Halogen free

MOUNTING PAD LAYOUT





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