

PJC7438

50V N-Channel Enhancement Mode MOSFET – ESD Protected

Voltage

50 V

Current

400mA

Features

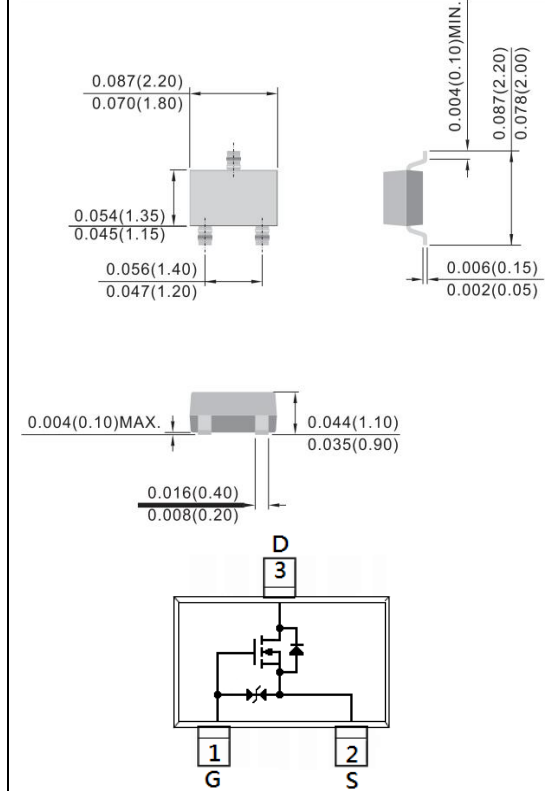
- RDS(ON) , VGS@10V, ID@500mA<1.45Ω
- RDS(ON) , VGS@4.5V, ID@200mA<1.95Ω
- RDS(ON) , VGS@2.5V, ID@100mA<4.0Ω
- RDS(ON) , VGS@1.8V, ID@10mA<6.0Ω
- Advanced Trench Process Technology
- ESD Protected 2KV HBM
- Specially Designed for Relay driver, Speed line drive, etc.
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: SOT-323 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00018 ounces, 0.005 grams
- Marking: C38

SOT-323

Unit: inch(mm)



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

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V _{DS}	50	V
Gate-Source Voltage		V _{GS}	+20	V
Continuous Drain Current		I _D	400	mA
Pulsed Drain Current		I _{DM}	1200	mA
Power Dissipation	T _A =25°C	P _D	350	mW
	Derate above 25°C		2.8	mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Typical Thermal resistance		R _{θJA}	357	°C/W
- Junction to Ambient (Note 3)				

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	50	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.5	0.86	1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =500mA	-	1.2	1.45	Ω
		V _{GS} =4.5V, I _D =200mA	-	1.3	1.95	
		V _{GS} =2.5V, I _D =100mA	-	1.7	4.0	
		V _{GS} =1.8V, I _D =10mA	-	4.0	6.0	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±10	uA
Dynamic (Note 4)						
Total Gate Charge	Q _g	V _{DS} =25V, I _D =500mA, V _{GS} =4.5V	-	0.95	-	nC
Gate-Source Charge	Q _{gs}		-	0.34	-	
Gate-Drain Charge	Q _{gd}		-	0.32	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	-	36	-	pF
Output Capacitance	C _{oss}		-	11	-	
Reverse Transfer Capacitance	C _{rss}		-	6.6	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =25V, I _D =500mA, V _{GS} =10V, R _G =6Ω (Note 1,2)	-	2.3	-	ns
Turn-On Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{d(off)}		-	7	-	
Turn-Off Fall Time	t _f		-	20	-	
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	-	0.9	1.5	V

NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} 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 square pad of copper
4. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

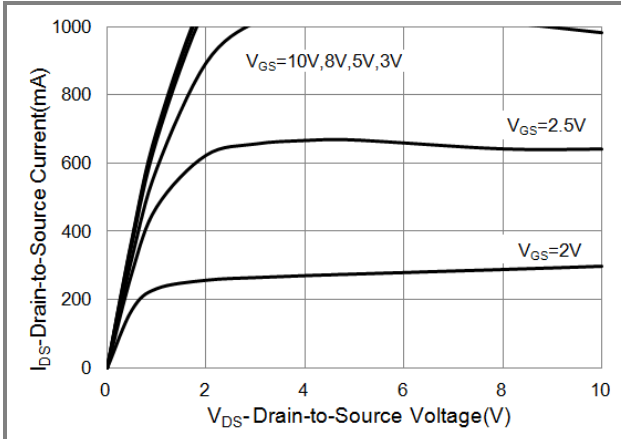


Fig.1 On-Region Characteristics

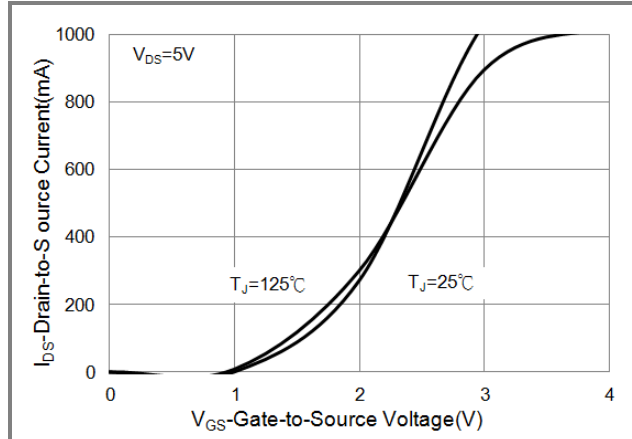


Fig.2 Transfer Characteristics

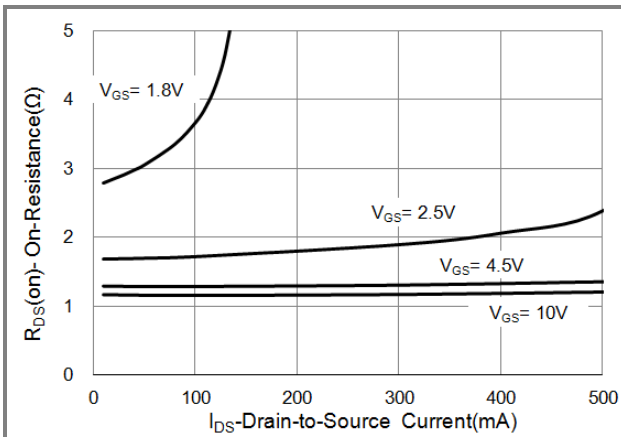


Fig.3 On-Resistance vs. Drain Current

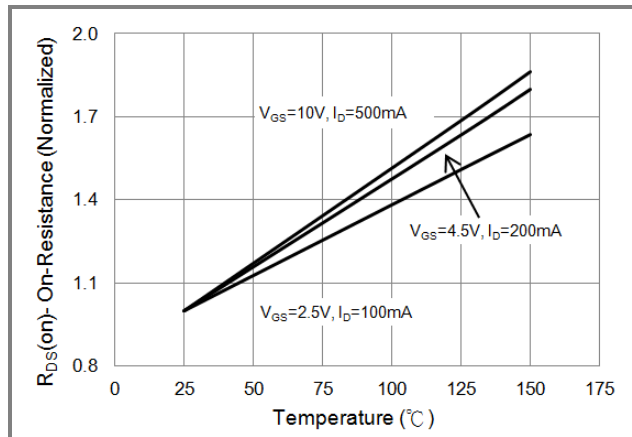


Fig.4 On-Resistance vs. Junction temperature

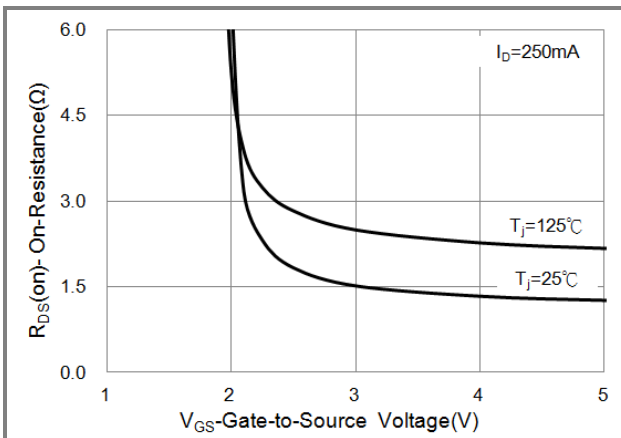


Fig.5 On-Resistance Variation with VGS.

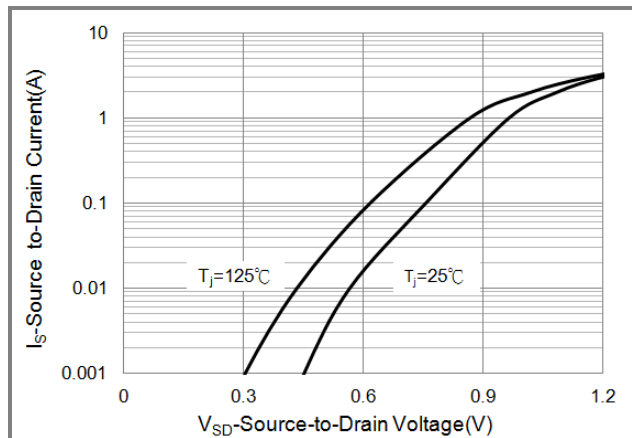


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

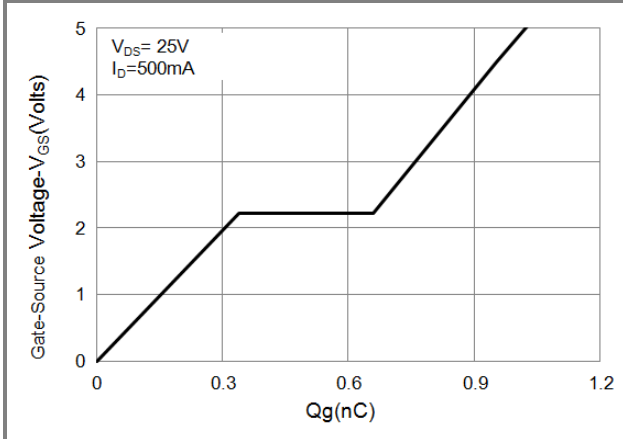


Fig.7 Gate-Charge Characteristics

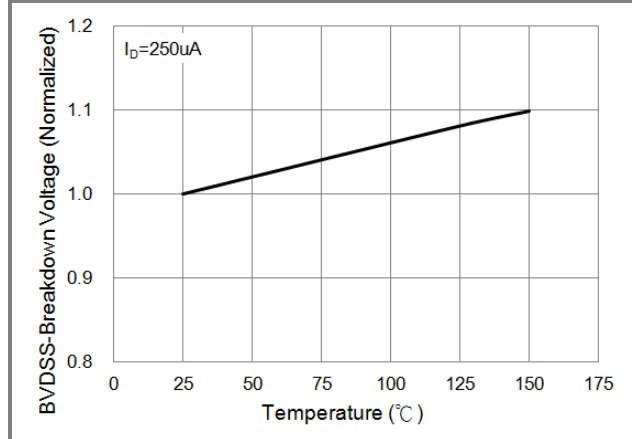


Fig.8 Breakdown Voltage Variation vs. Temperature

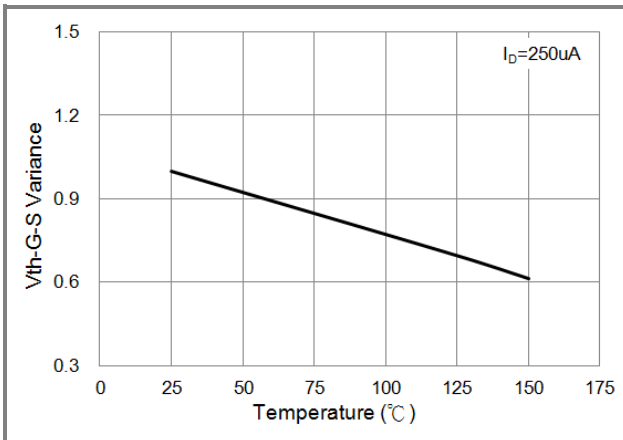


Fig.9 Threshold Voltage Variation with Temperature.

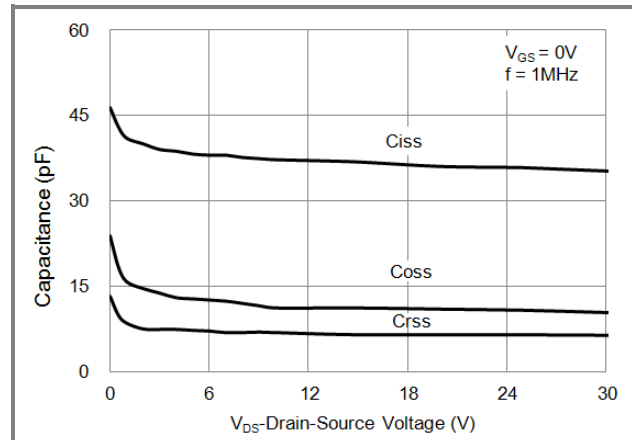


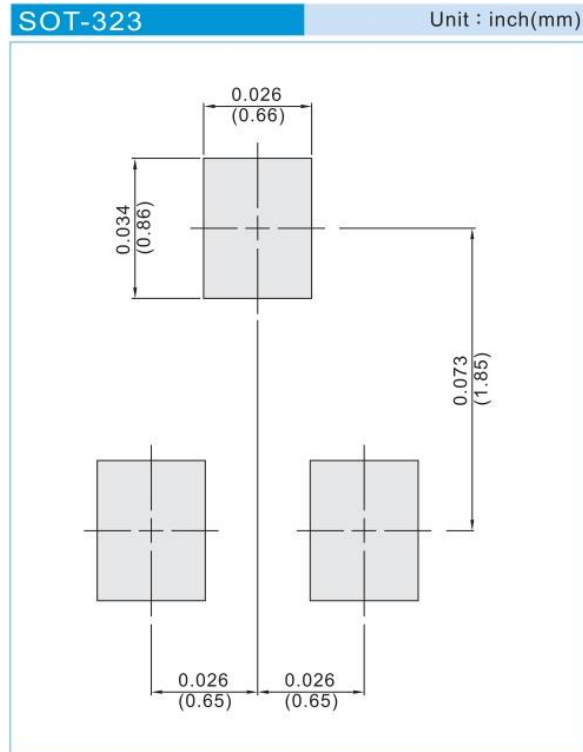
Fig.10 Capacitance vs. Drain-Source Voltage.

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJC7438	SOT-323	3K pcs / 7" reel	C38
PJC7438	SOT-323	12K pcs / 13" reel	C38

Mounting Pad Layout



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