



PJE8408

20V N-Channel Enhancement Mode MOSFET

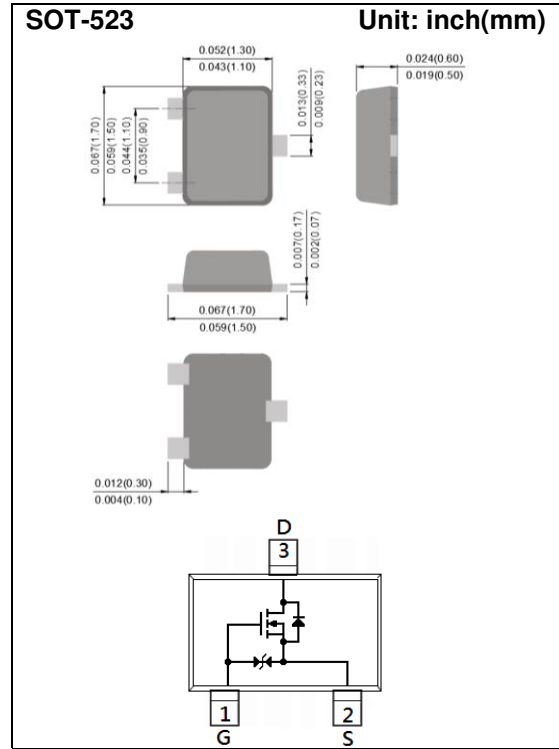
Voltage 20 V **Current** 500mA

Features

- Low Voltage Drive (1.2V).
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SOT-523 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.002 grams
- Marking : E08



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

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	V _{DS}	20	V	
Gate-Source Voltage	V _{GS}	±10	V	
Continuous Drain Current	I _D	500	mA	
Pulsed Drain Current ^(Note 4)	I _{DM}	1000	mA	
Power Dissipation	P _D	T _a =25°C	300	mW
		Derate above 25°C	2.4	mW/°C
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C	
Typical Thermal Resistance	R _{θJA}	417	°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.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.3	0.64	0.9	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =500mA	-	310	400	mΩ
		V _{GS} =2.5V, I _D =200mA	-	360	650	
		V _{GS} =1.8V, I _D =100mA	-	430	800	
		V _{GS} =1.5V, I _D =50mA	-	510	1200	
		V _{GS} =1.2V, I _D =20mA	-	710	3000	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	±0.5	±10	uA
Dynamic ^(Note 5)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =500mA, V _{GS} =4.5V ^(Note 1,2)	-	1.4	-	nC
Gate-Source Charge	Q _{gs}		-	0.22	-	
Gate-Drain Charge	Q _{gd}		-	0.21	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1.0MHZ	-	67	-	pF
Output Capacitance	C _{oss}		-	19	-	
Reverse Transfer Capacitance	C _{rss}		-	6	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =150mA, V _{GS} =4.0V, R _G =10Ω ^(Note 1,2)	-	2.8	-	ns
Turn-On Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{d(off)}		-	23	-	
Turn-Off Fall Time	t _f		-	23	-	
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	-	0.87	1.3	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 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

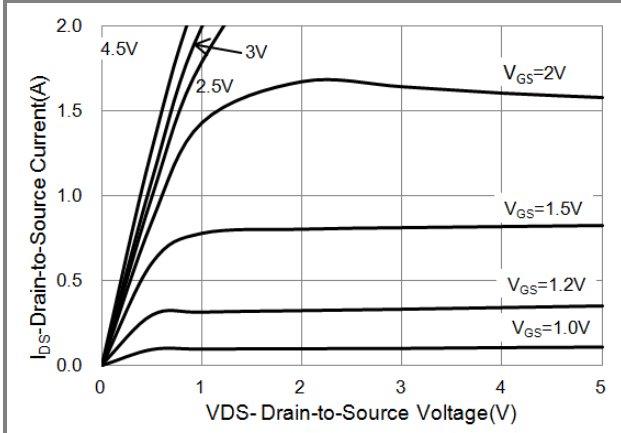


Fig.1 On-Region Characteristics

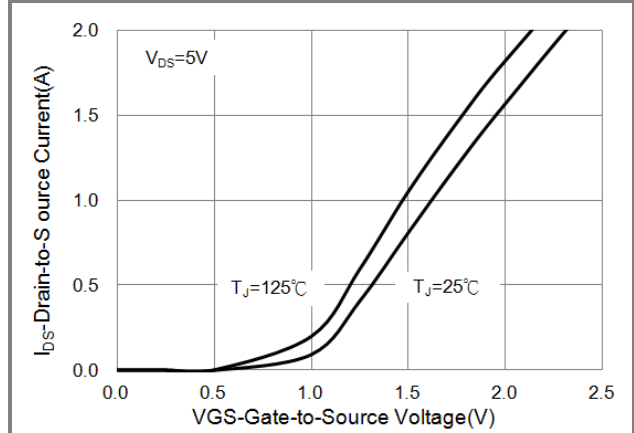


Fig.2 Transfer Characteristics

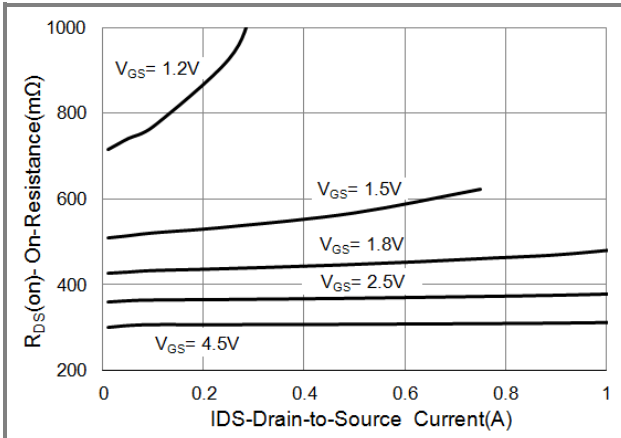


Fig.3 On-Resistance vs. Drain Current

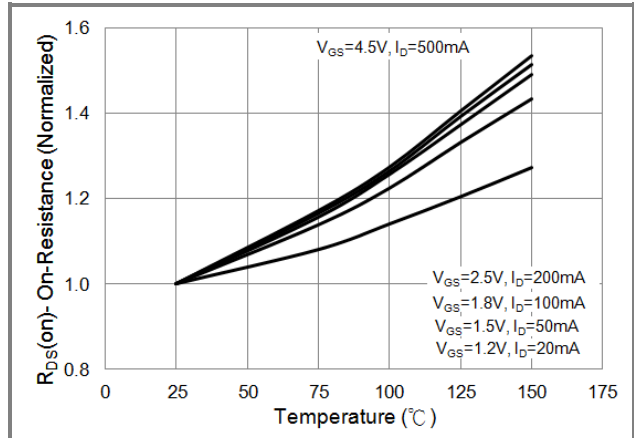


Fig.4 On-Resistance vs. Junction temperature

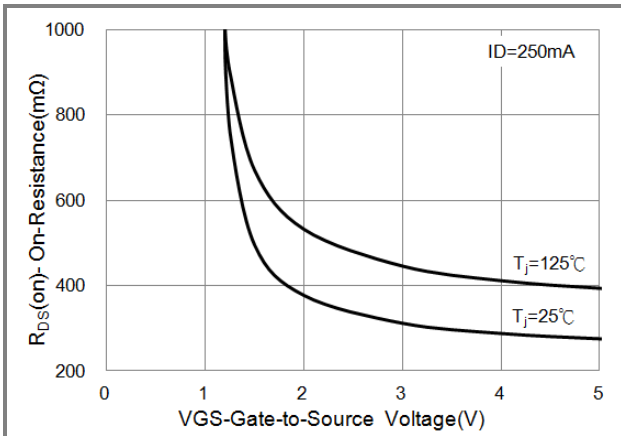


Fig.5 On-Resistance Variation with VGS.

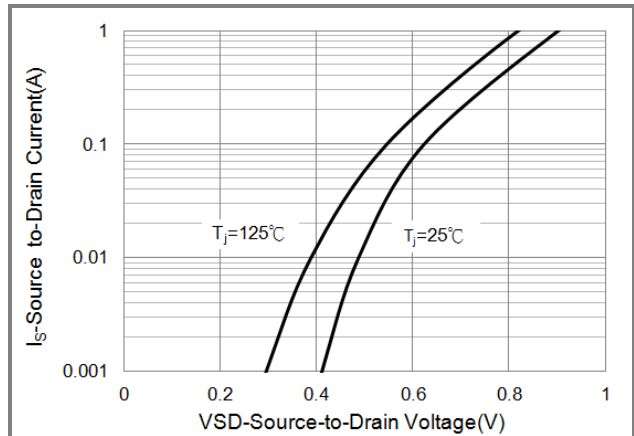


Fig.6 Body Diode Characteristics



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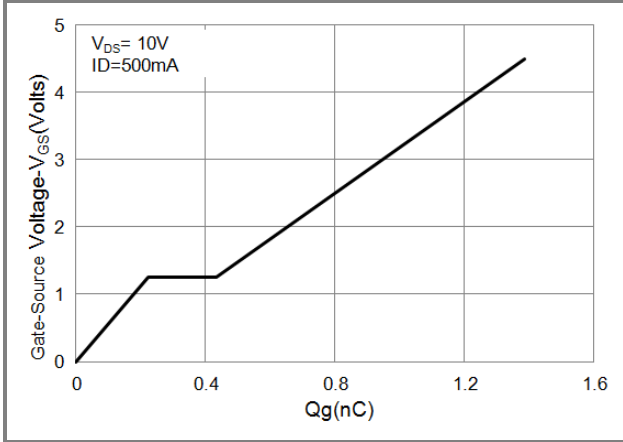


Fig.7 Gate-Charge Characteristics

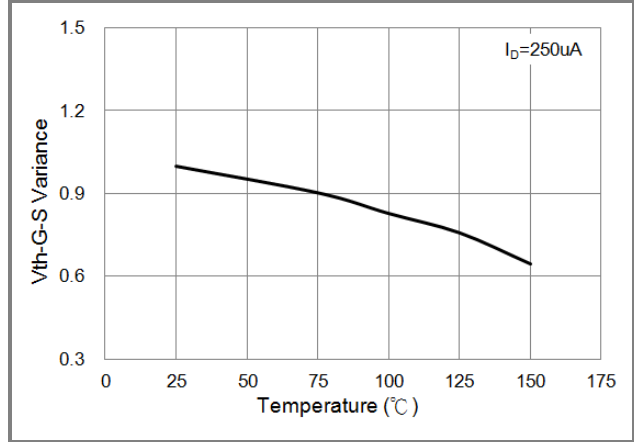


Fig.8 Threshold Voltage Variation with Temperature.

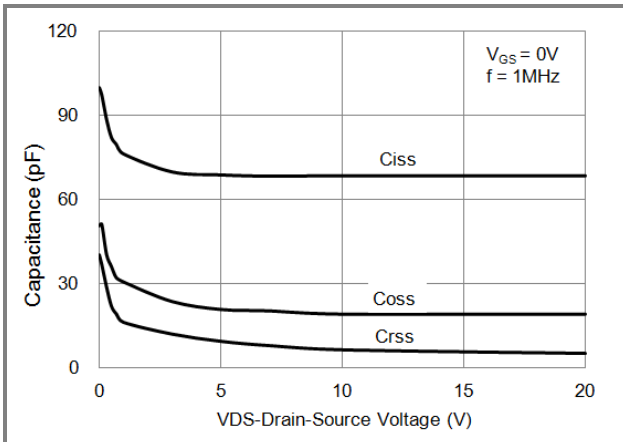


Fig.9 Capacitance vs. Drain-Source Voltage.

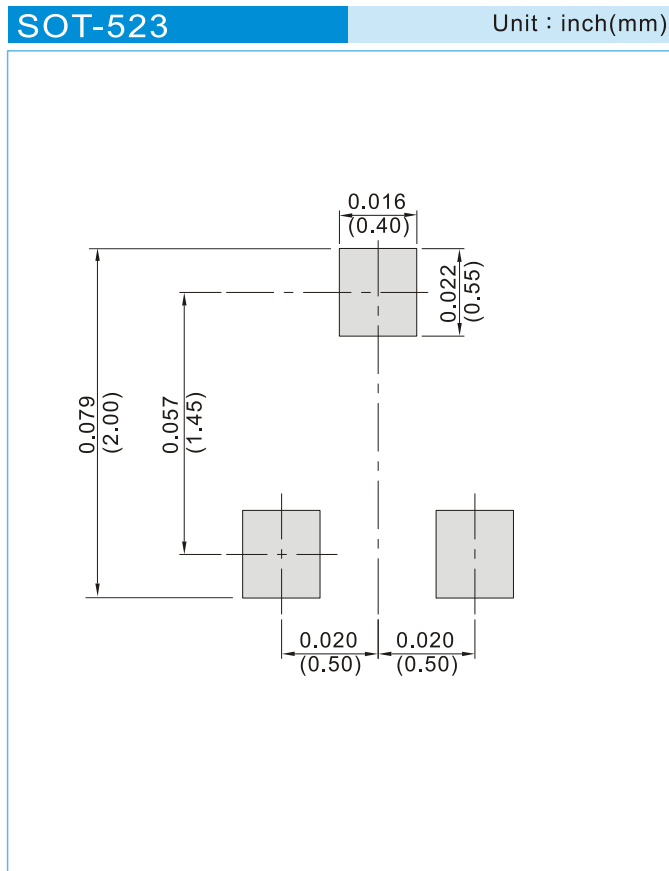


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Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJE8408_R1_00001	SOT-523	4K pcs / 7" reel	E08	Halogen free RoHS compliant

Mounting Pad Layout





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