

PJE8416

20V N-Channel Enhancement Mode MOSFET

Voltage	20 V	Current	800mA
---------	------	---------	-------

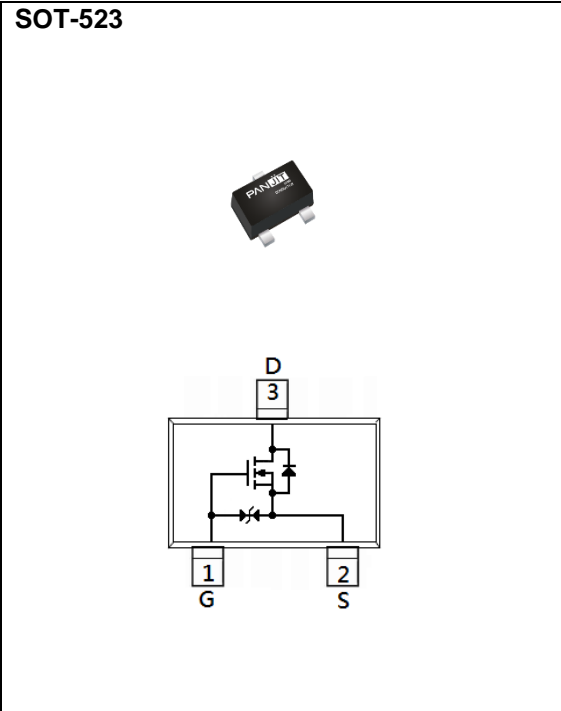
Features

- Advanced Trench Process Technology
- ESD Protected
- Specially Designed for Switch Load, PWM Application, etc
- 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

SOT-523



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}	±8	
Continuous Drain Current ^(Note 4)		I _D	800	mA
Pulsed Drain Current ^(Note 1)		I _{DM}	1600	
Power Dissipation	T _A =25°C	P _D	300	mW
	Derate above 25°C		2.4	mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Thermal Resistance		R _{θJA}	417	°C/W
- Junction to Ambient ^(Note 5)				

PJE8416

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	0.68	1	
Drain-Source On-State Resistance	R _{DSON}	V _{GS} =4.5V, I _D =500mA	-	200	300	mΩ
		V _{GS} =2.5V, I _D =400mA	-	240	400	
		V _{GS} =1.8V, I _D =200mA	-	300	550	
		V _{GS} =1.5V, I _D =100mA	-	370	800	
		V _{GS} =1.2V, I _D =10mA	-	680	1500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	-	±10	
Dynamic ^(Note 6)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =500mA, V _{GS} =4.5V ^(Note 2,3)	-	1.1	-	nC
Gate-Source Charge	Q _{gs}		-	0.2	-	
Gate-Drain Charge	Q _{gd}		-	0.1	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	50	-	pF
Output Capacitance	C _{oss}		-	12	-	
Reverse Transfer Capacitance	C _{rss}		-	10	-	
Gate resistance	R _g	f=1.0MHz	-	1.6	-	Ω
Turn-On Delay Time	t _{d(on)}	V _{DS} =10V, I _D =500mA, V _{GS} =4.5V, R _G =3.3Ω ^(Note 2,3)	-	2	-	ns
Turn-On Rise Time	t _r		-	22	-	
Turn-Off Delay Time	t _{d(off)}		-	57	-	
Turn-Off Fall Time	t _f		-	34	-	
Drain-Source Diode						
Diode Forward Current	I _S	---	-	-	800	mA
Diode Forward Voltage	V _{SD}	I _S =500mA, V _{GS} =0V	-	0.9	1	V

NOTES :

- 1.Pulse width<300us, Duty cycle<2%.
- 2.Essentially independent of operating temperature typical characteristics.
- 3.Repetitive rating, pulse width limited by junction temperature T_J(MAX)=150°C.Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
- 4.The maximum current rating is package limited.
- 5.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 inch² with 2oz.square pad of copper.
- 6.Guaranteed by design, not subject to production testing.

PJE8416

TYPICAL CHARACTERISTIC CURVES

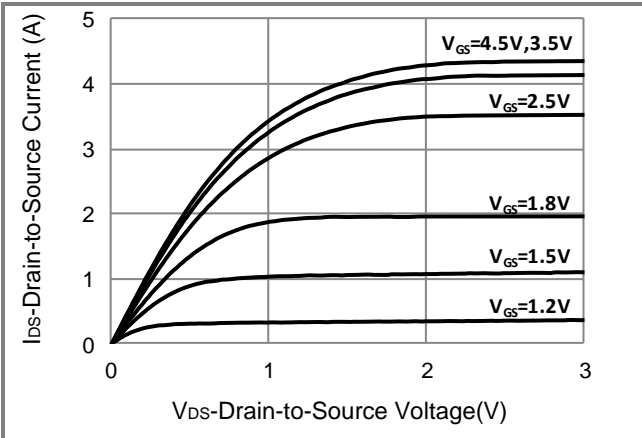


Fig.1 Output Characteristics

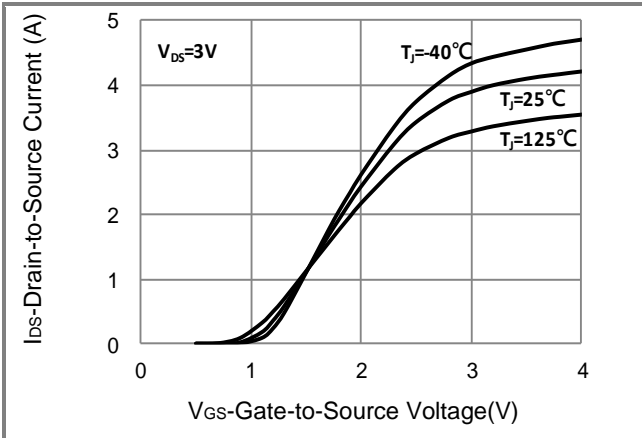


Fig.2 Transfer Characteristics

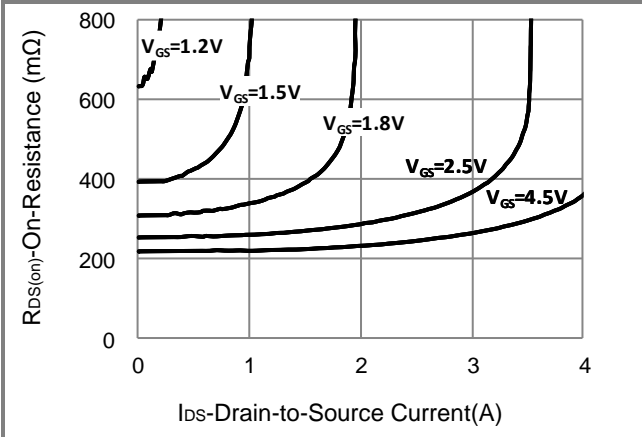


Fig.3 On-Resistance vs. Drain Current

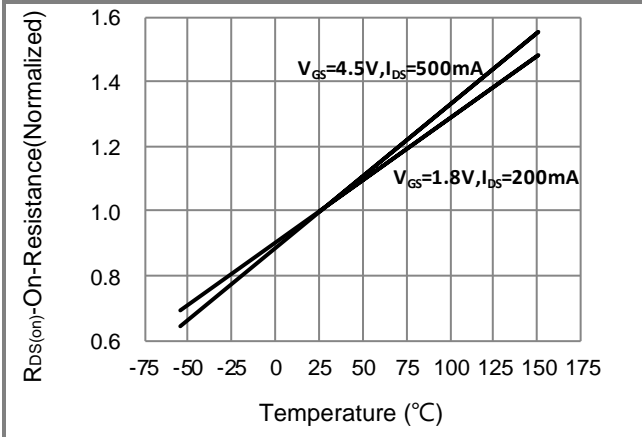


Fig.4 On-Resistance vs. Junction temperature

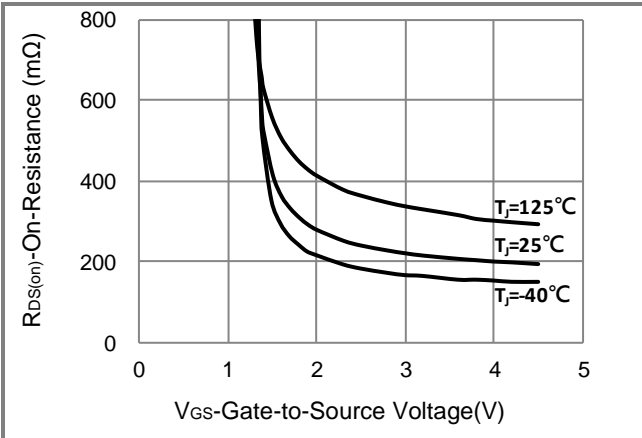


Fig.5 On-Resistance Variation with Vgs

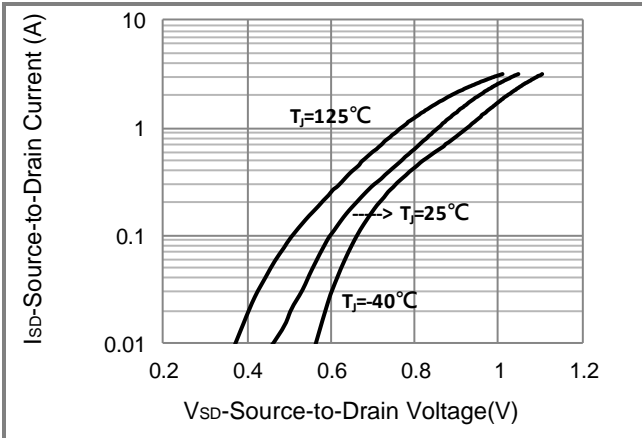


Fig.6 Source-Drain Diode Forward Voltage

PJE8416

TYPICAL CHARACTERISTIC CURVES

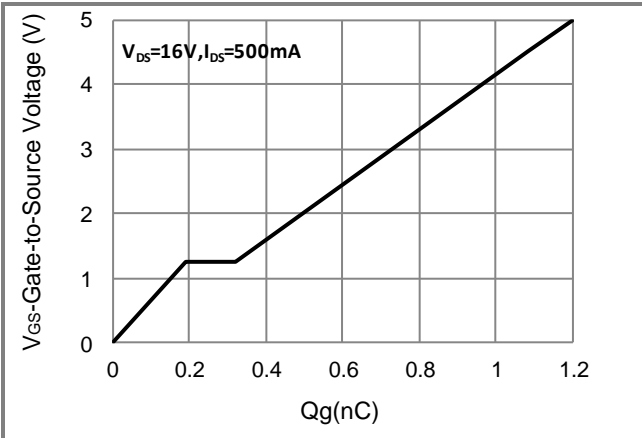


Fig.7 Gate-Charge Characteristics

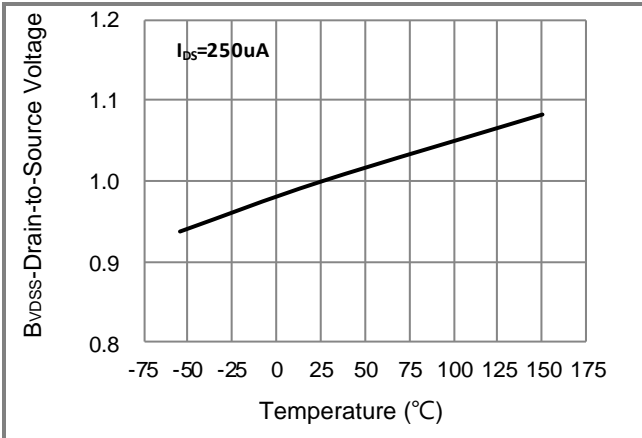


Fig.8 Breakdown Voltage Variation vs. Temperature

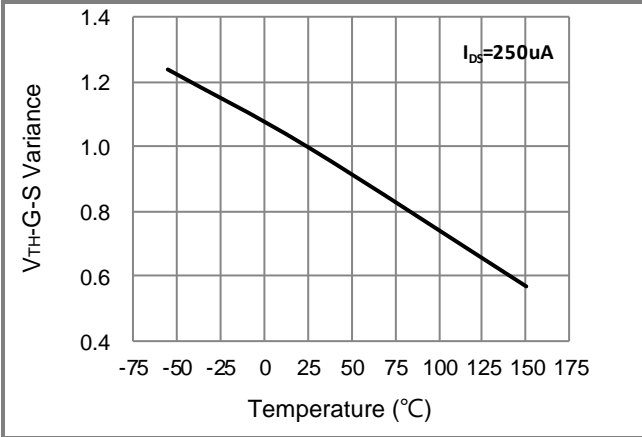


Fig.9 Threshold Voltage Variation with Temperature

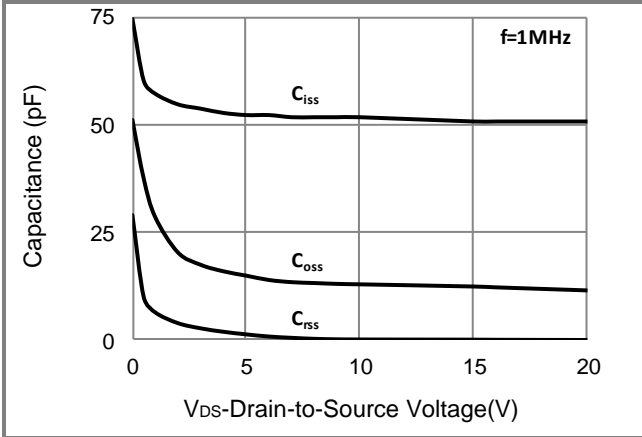


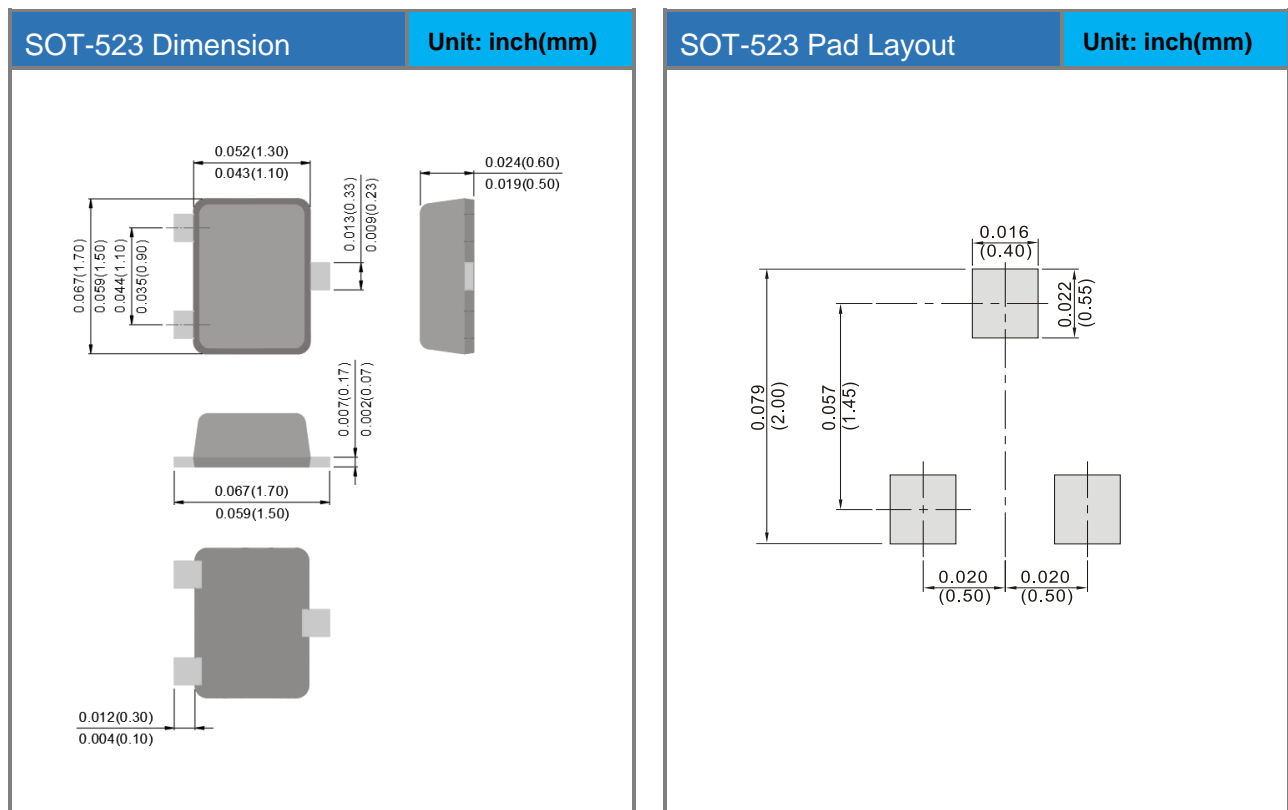
Fig.10 Capacitance vs. Drain-Source Voltage

PJE8416

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJE8416	SOT-523	4K pcs / 7" reel	E16

Packaging Information & Mounting Pad Layout



PJE8416

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.