



PJA3456E

20V N-Channel Enhancement Mode MOSFET

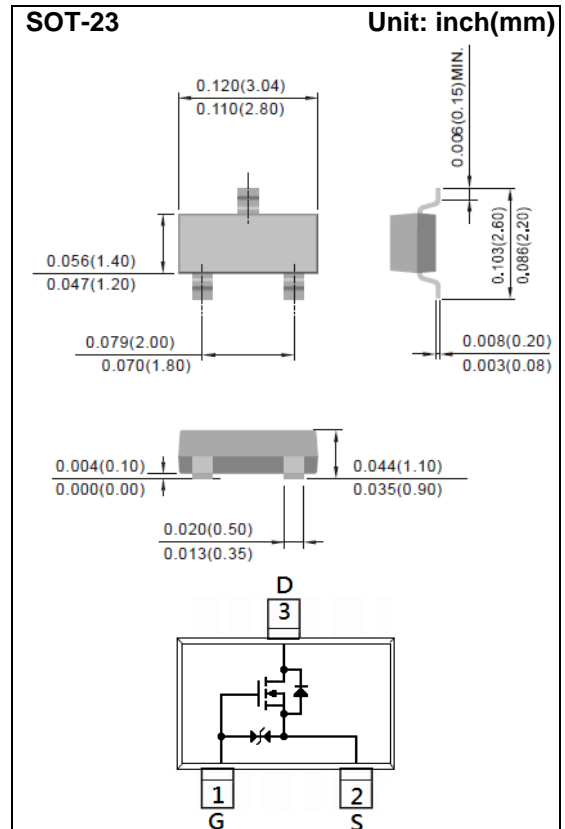
Voltage 20 V **Current** 7.3 A

Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@5A < 15.5m\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@4.5A < 17.5m\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@4A < 22.5m\Omega$
- Advanced Trench Process Technology
- Advanced Trench Process Technology
- ESD Protected
- Specially Designed for Relay driver, Speed line drive, etc.
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0084 grams



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

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	V_{DS}	20	V	
Gate-Source Voltage	V_{GS}	± 10		
Continuous Drain Current ^(Note 4)	I_D	7.3	A	
Pulsed Drain Current ^(Note 1)	I_{DM}	29.2		
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	1.25	W
		Derate above 25°C	10	mW/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$	
Typical Thermal Resistance	$R_{\theta JA}$	100	$^\circ\text{C/W}$	
- Junction to Ambient ^(Note 3,4)				



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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}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.3	0.6	1	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=5A$	-	13	15.5	m Ω
		$V_{GS}=2.5V, I_D=4.5A$	-	14.5	17.5	
		$V_{GS}=1.8V, I_D=4A$	-	17	22.5	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 10	μA
Dynamic (Note 5)						
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=9A,$ $V_{GS}=4.5V$ (Note 2,3)	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	1.3	-	
Gate-Drain Charge	Q_{gd}		-	1.6	-	
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V,$ $f=1MHz$	-	1177	-	pF
Output Capacitance	C_{oss}		-	157	-	
Reverse Transfer Capacitance	C_{rss}		-	134	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A,$ $V_{GS}=4.5V,$ $R_G=25\Omega$ (Note 2,3)	-	16	-	ns
Turn-On Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	124	-	
Turn-Off Fall Time	t_f		-	101	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	1.5	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.73	1	V

NOTES:

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



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TYPICAL CHARACTERISTIC CURVES

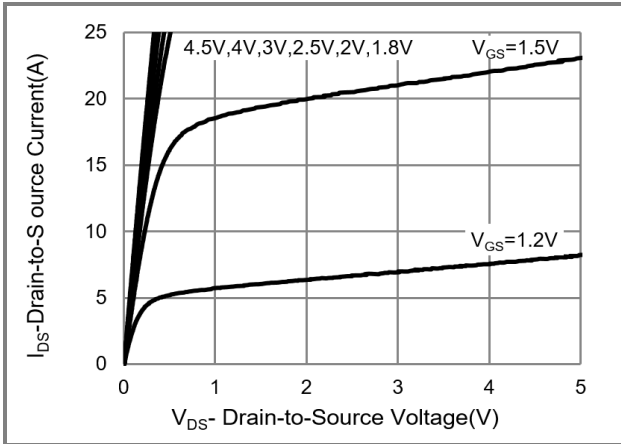


Fig.1 On-Region Characteristics

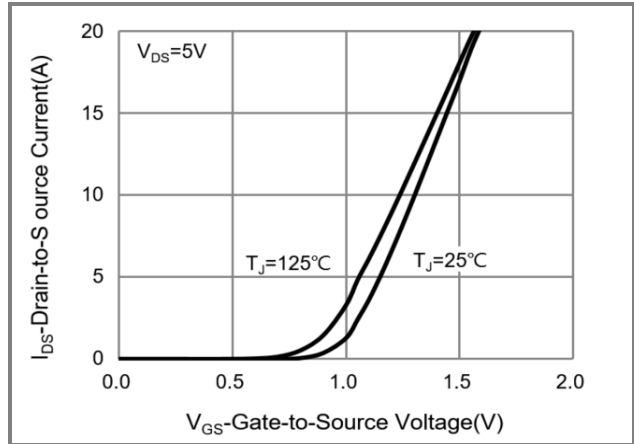


Fig.2 Transfer Characteristics

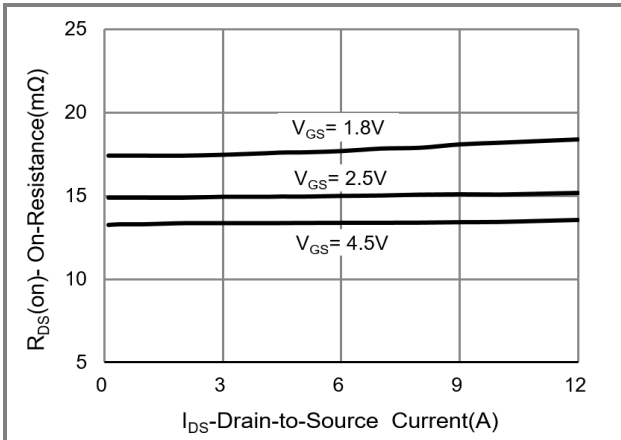


Fig.3 On-Resistance vs. Drain Current

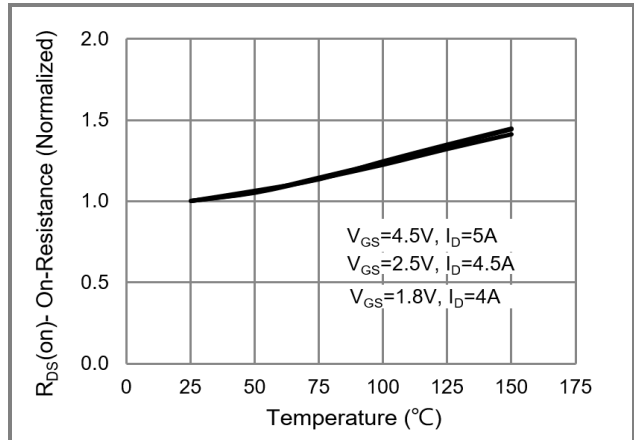


Fig.4 On-Resistance vs. Junction temperature

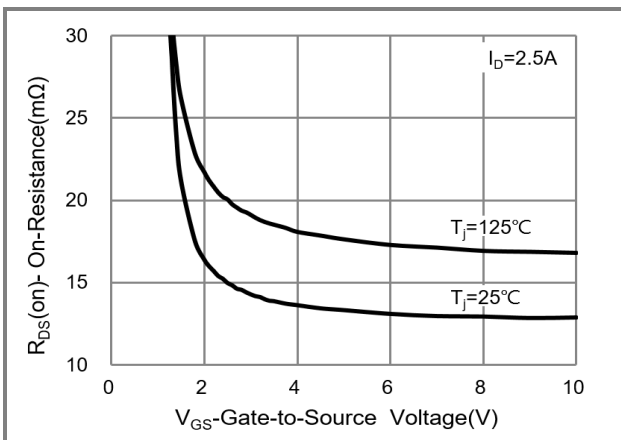


Fig.5 On-Resistance Variation with V_{GS}

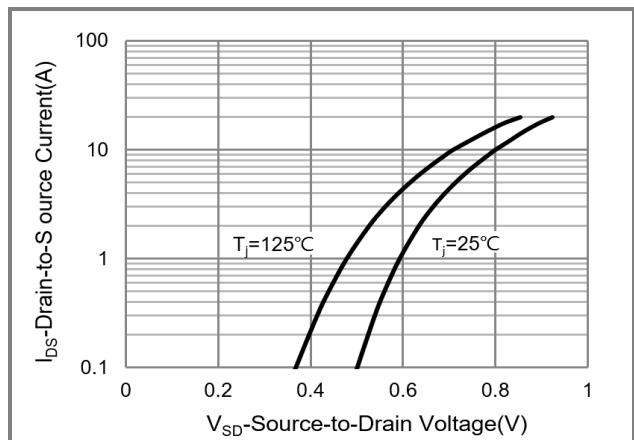


Fig.6 Body Diode Characteristics



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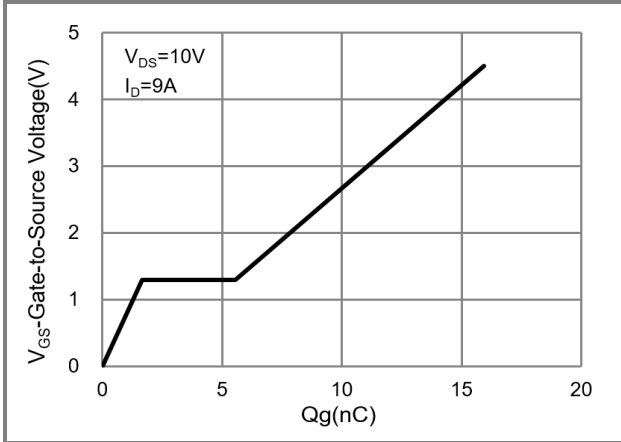


Fig.7 Gate-Charge Characteristics

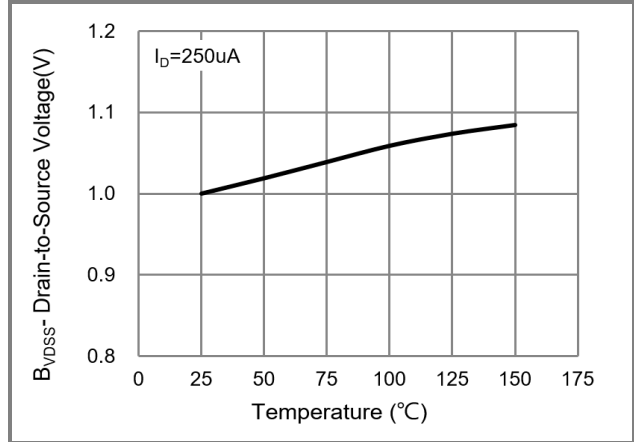


Fig.8 Breakdown Voltage Variation vs. Temperature

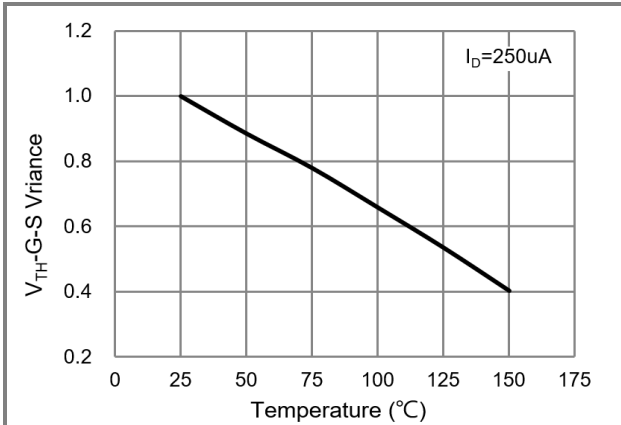


Fig.9 Threshold Voltage Variation with Temperature

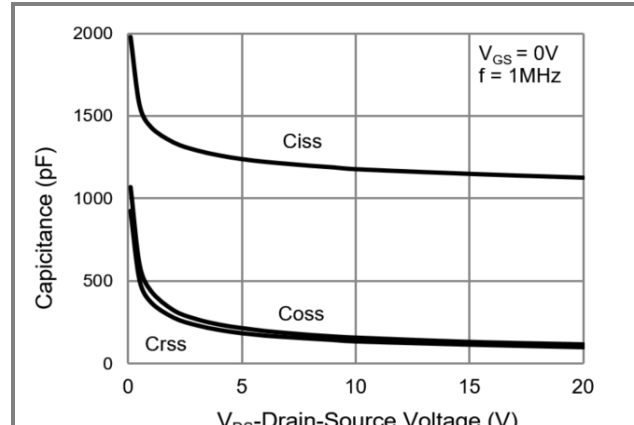


Fig.10 Capacitance vs. Drain-Source Voltage

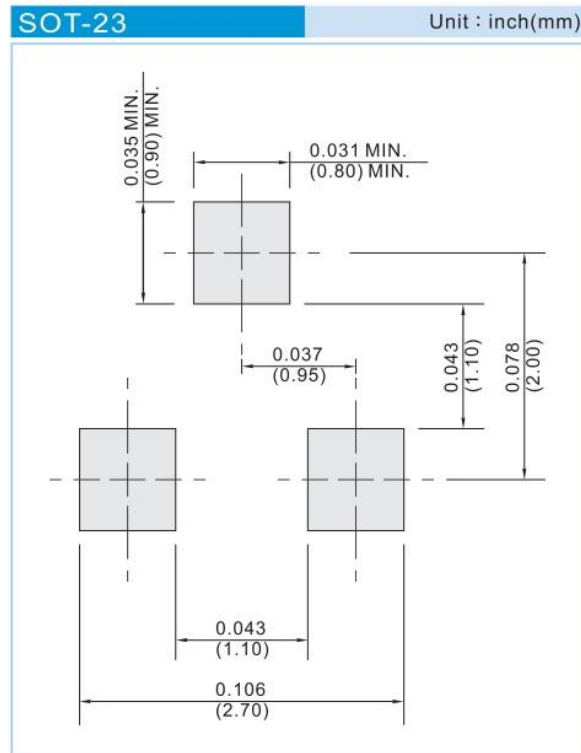


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Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJA3456E_R1_00001	SOT-23	3K pcs / 7" reel	56E	Halogen free

Mounting Pad Layout





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