

PJE138KTB89

50V N-Channel Enhancement Mode MOSFET– ESD Protected

Voltage 50 V **Current** 350 mA

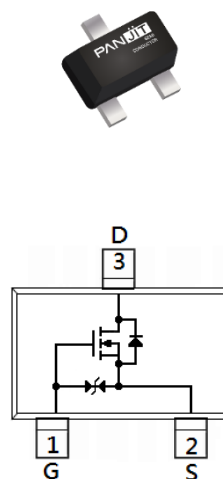
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@500mA < 1.6\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@200mA < 2.5\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@100mA < 4.5\Omega$
- Specially Designed for Battery Operated Systems, Solid-State Relays Drivers: Relay, Displays, Memories, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SC-89 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0026 grams

SC-89



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V _{DS}	50	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current ^(Note 4)		I _D	350	mA
Pulsed Drain Current ^(Note 1)		I _{DM}	1200	
Power Dissipation	T _a =25°C	P _D	223	mW
	Derate above 25°C		1.8	mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Thermal Resistance		R _{θJA}	560	°C/W
- Junction to Ambient ^(Note 3,4)				

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

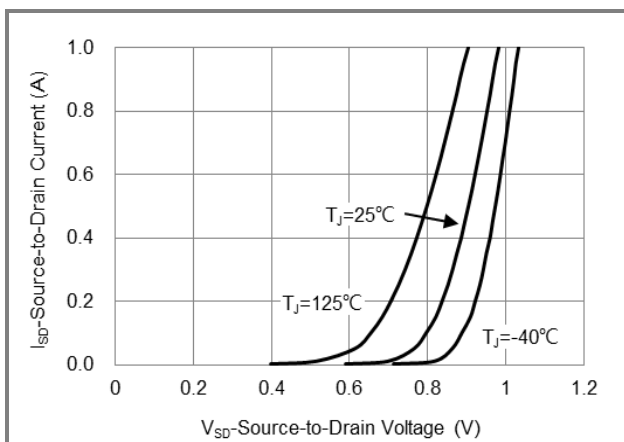
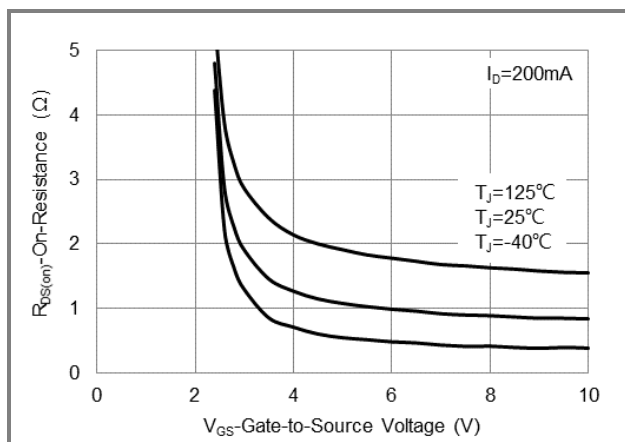
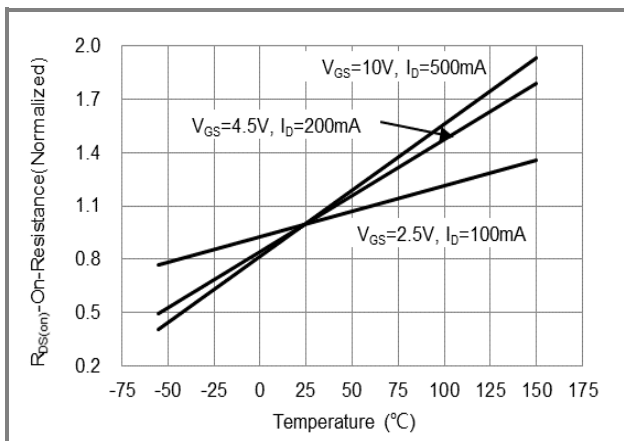
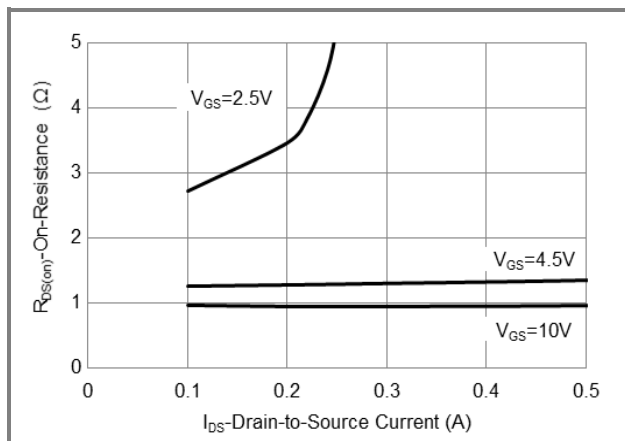
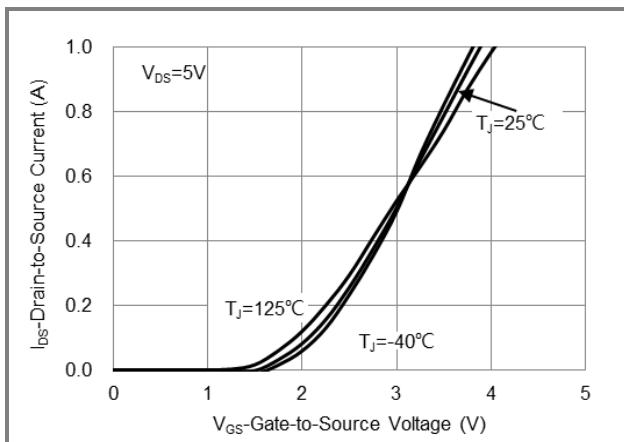
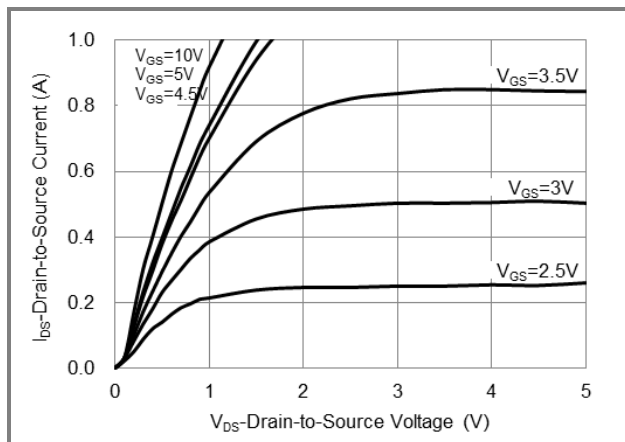
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	50	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.8	1	1.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =500mA	-	0.96	1.6	Ω
		V _{GS} =4.5V, I _D =200mA	-	1.25	2.5	
		V _{GS} =2.5V, I _D =100mA	-	2.73	4.5	
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	
Dynamic ^(Note 5)						
Total Gate Charge	Q _g	V _{DS} =25V, I _D =250mA, V _{GS} =4.5V ^(Note 1,2)	-	0.63	1	nC
Gate-Source Charge	Q _{gs}		-	0.2	-	
Gate-Drain Charge	Q _{gd}		-	0.23	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	25	50	pF
Output Capacitance	C _{oss}		-	9.5	20	
Reverse Transfer Capacitance	C _{rss}		-	2.1	5	
Turn-On Delay Time	td _(on)	V _{DD} =25V, I _D =500mA, V _{GS} =10V, R _G =6Ω ^(Note 1,2)	-	2.2	5	ns
Turn-On Rise Time	tr		-	19.2	38	
Turn-Off Delay Time	td _(off)		-	6.2	12	
Turn-Off Fall Time	tf		-	23	50	
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	-	0.86	1.5	V

NOTES :

- Pulse width≤300us, Duty cycle≤2%.
- Essentially independent of operating temperature typical characteristics.
- 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.
- 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.
- The maximum current rating is package limited.
- Guaranteed by design, not subject to production testing.

PJE138KTB89

TYPICAL CHARACTERISTIC CURVES



PJE138KTB89

TYPICAL CHARACTERISTIC CURVES

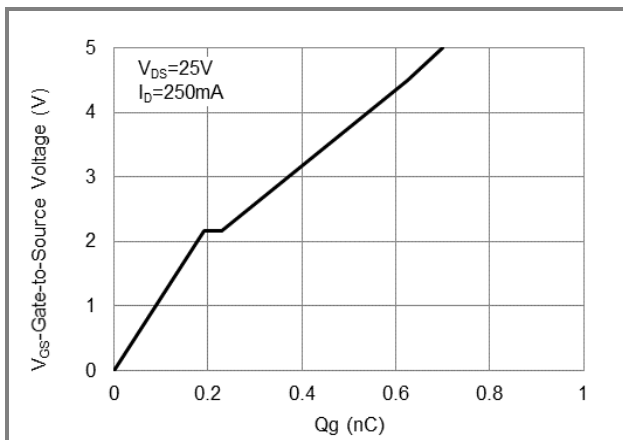


Fig.7 Gate-Charge Characteristics

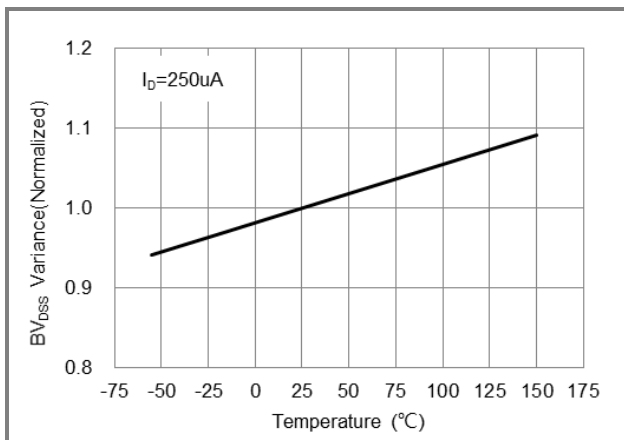


Fig.8 Breakdown Voltage Variation vs. Temperature

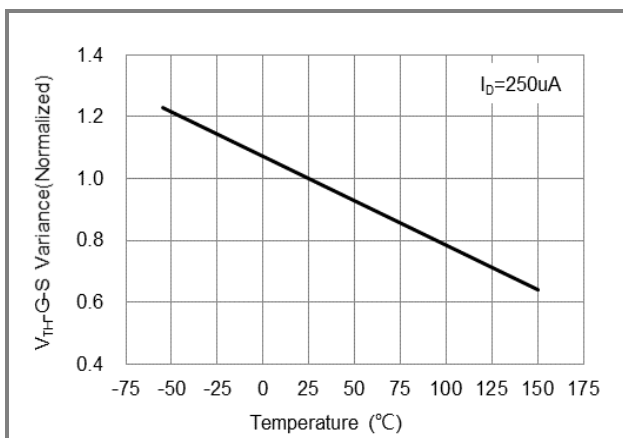


Fig.9 Threshold Voltage Variation with Temperature

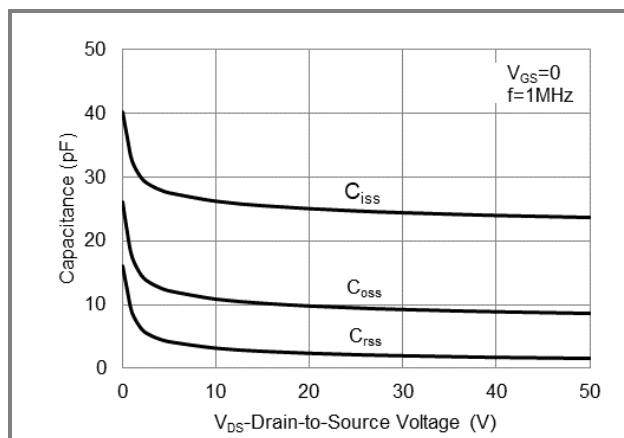


Fig.10 Capacitance vs. Drain-Source Voltage

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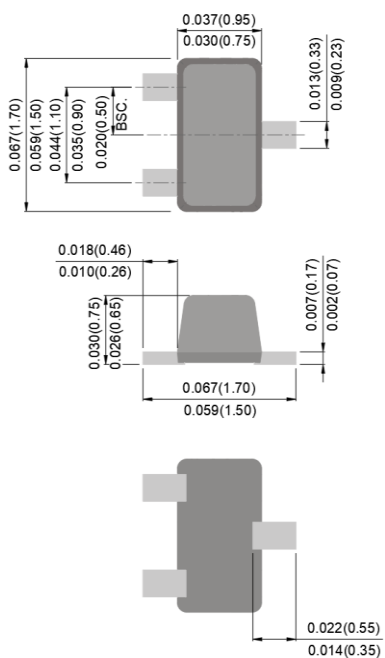
Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJE138KTB89	SC-89	4K pcs / 7" reel	8KT

Packaging Information & Mounting Pad Layout

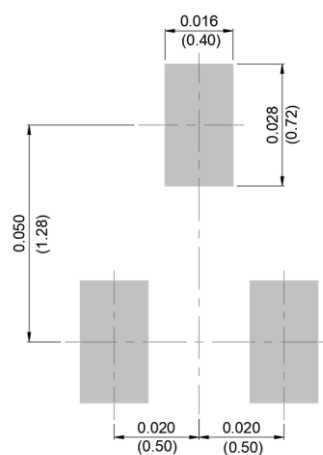
SC-89 Dimension

Unit: inch(mm)



SC-89 Pad Layout

Unit: inch(mm)



PJE138KTB89

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