

## RJK0822SPN

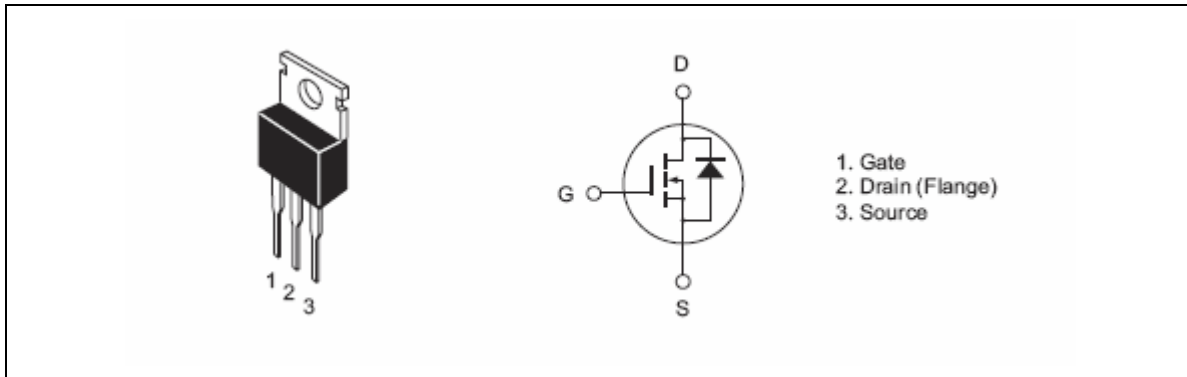
Silicon N Channel Power MOS FET  
Power Switching

Rev.1.00  
September.26.2007

### Features

- Low on-resistance  
 $R_{DS(on)} = 7.9m\Omega$  typ.(at  $V_{GS} = 10V$ )
- High speed switching
- Low drive current
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

### Outline



Note: This product is designed for Electric Bike (E-Bike) application in China market.

**Absolute Maximum Ratings**

(Ta = 25°C)

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	V <sub>DSS</sub>	80	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	80	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note1</sup>	320	A
Body-drain diode reverse drain current	I <sub>DR</sub>	80	A
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	100	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. T<sub>c</sub> = 25°C

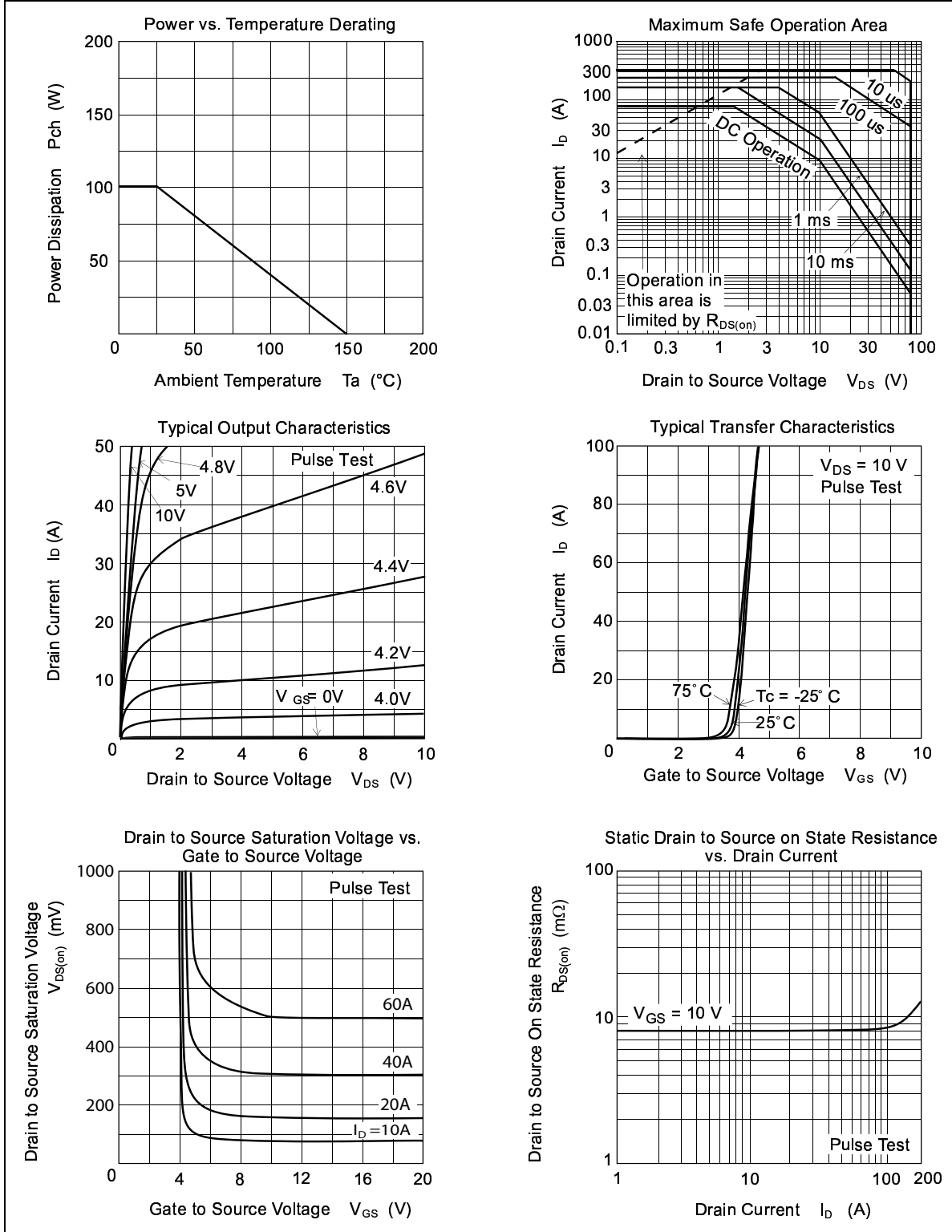
## Electrical Characteristics

(Ta = 25°C)

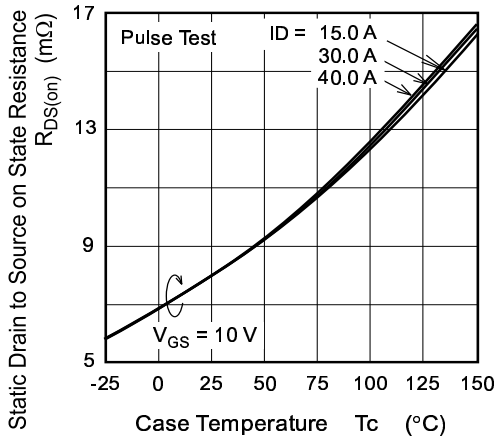
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	80	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.5$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 80 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2	—	4	V	$V_{DS} = 10 \text{ V}$ , $I_D = 250\mu\text{A}$
Static drain to source on state resistance	$R_{DS(on)}$	—	7.9	9.8	m $\Omega$	$I_D = 40 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Forward transfer admittance	$ y_{fs} $	53	129	—	S	$I_D = 40 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	3880	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	540	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	260	—	pF	$f = 1 \text{ MHz}$
Gate Resistance	$R_g$	—	1.8	—	$\Omega$	
Total gate charge	$Q_g$	—	63	—	nc	$V_{DD} = 40 \text{ V}$
Gate to source charge	$Q_{gs}$	—	17	—	nc	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	16	—	nc	$I_D = 80 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$V_{GS} = 10 \text{ V}$ , $I_D = 40 \text{ A}$
Rise time	$t_r$	—	244	—	ns	$V_{DD} \cong 40 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	$R_L = 1.0 \Omega$
Fall time	$t_f$	—	20	—	ns	$R_g = 10 \Omega$
Body-drain diode forward voltage	$V_{DF}$	0.78	—	1.12	V	$I_F = 80 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	40	—	ns	$I_F = 25 \text{ A}$ , $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

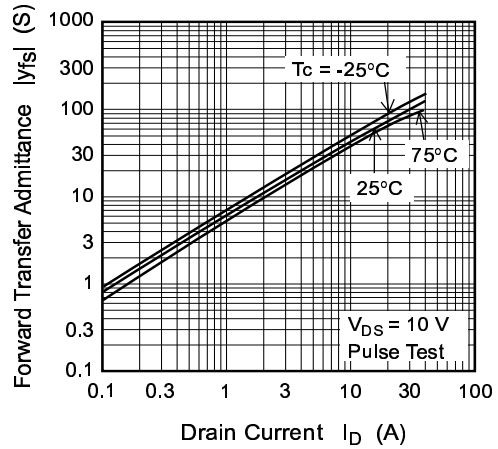
Main Characteristics



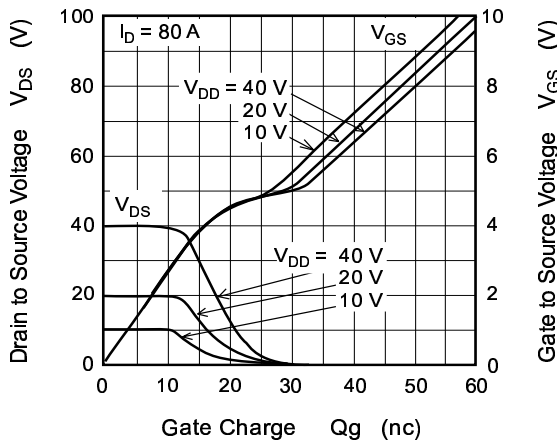
Static Drain to Source on State Resistance vs. Temperature



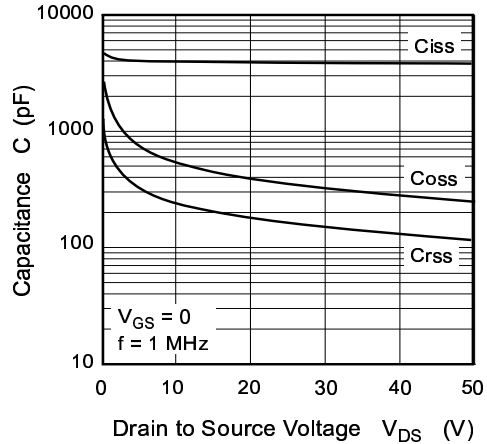
Forward Transfer Admittance vs. Drain Current



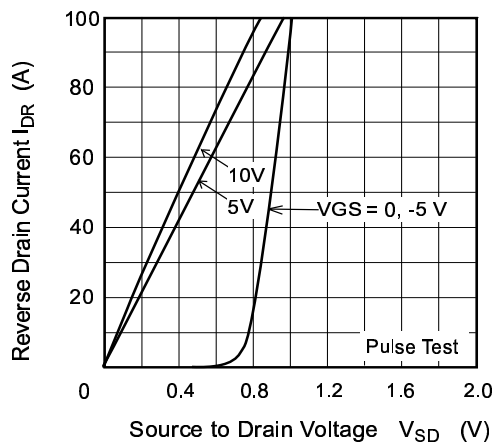
Dynamic Input Characteristics



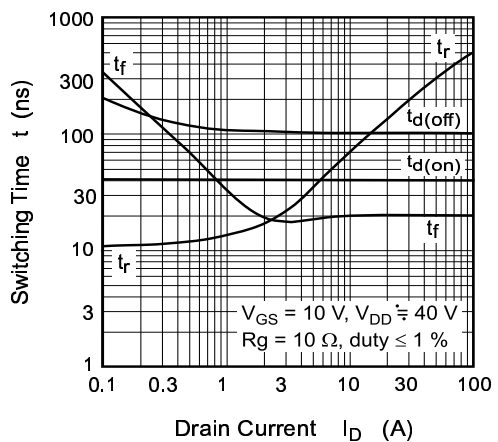
Typical Capacitance vs. Drain to Source Voltage

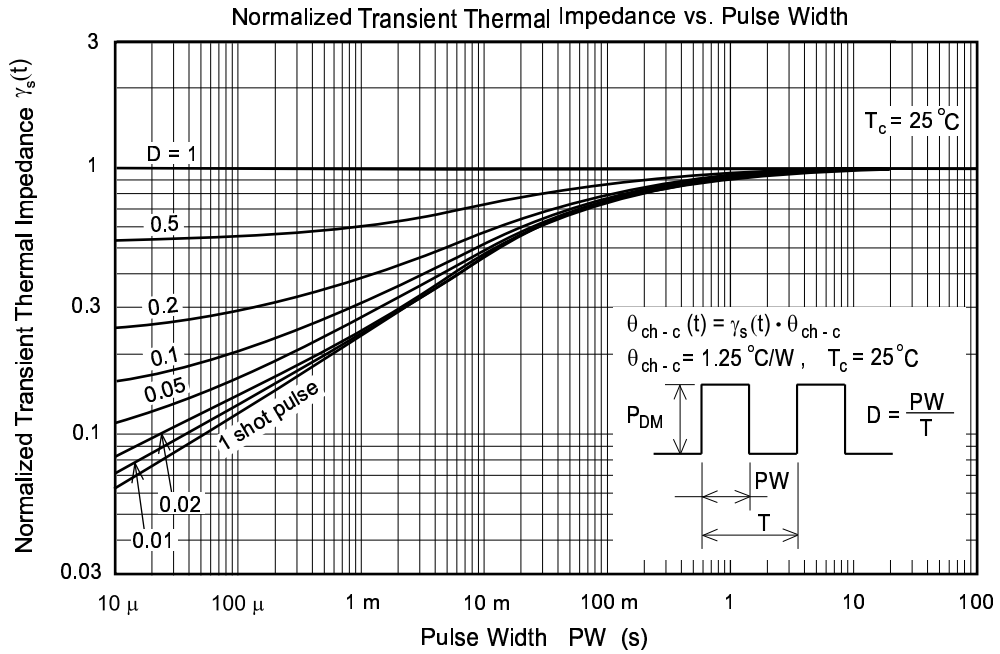


Reverse Drain Current vs. Source to Drain Voltage

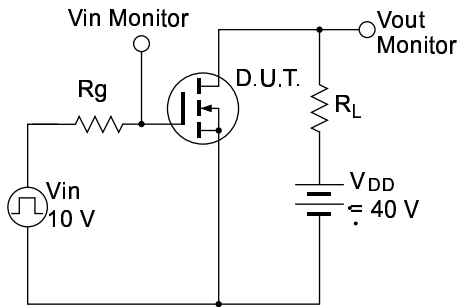


Switching Characteristics

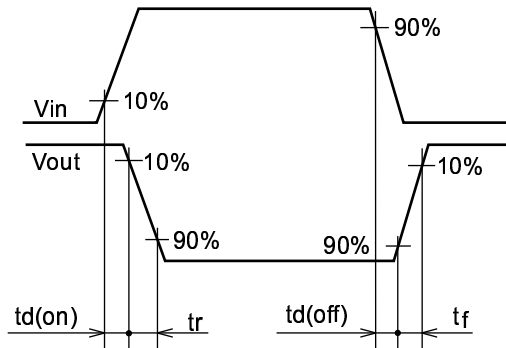




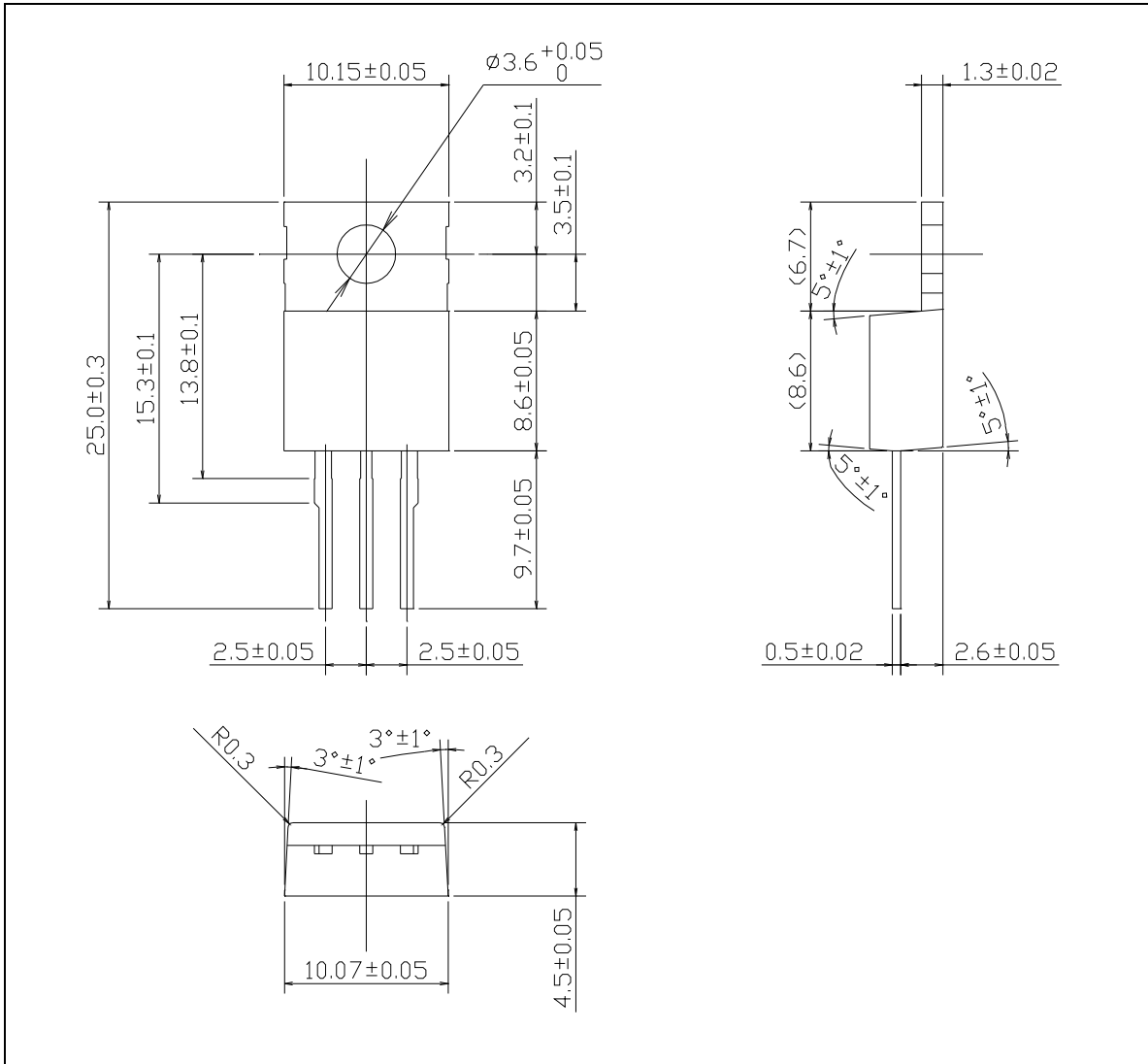
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
RJK0822SPN-00	500 pcs	Box (Sack/Tube)

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.