

RJK0628JPE

60 V - 160 A - N Channel MOS FET
High Speed Power Switching

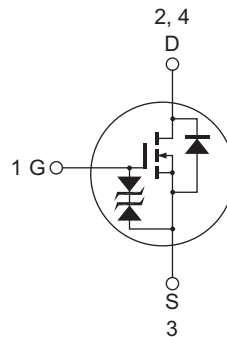
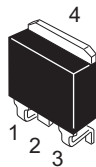
R07DS0336EJ0200
Rev.2.00
Aug 29, 2012

Features

- For Automotive application
- AEC-Q101 compliant
- Low on-resistance : $R_{DS(on)} = 2.6 \text{ m}\Omega$ typ.
- Capable of 4.5 V gate drive
- Low input capacitance : $C_{iss} = 5400 \text{ pF}$ typ

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK(S)-(1))



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	+20 / -5	V
Drain current	I_D	160	A
Drain peak current	I_D (pulse) ^{Note1}	640	A
Body-drain diode reverse drain current	I_{DR} ^{Note3}	160	A
Body-drain diode reverse drain peak current	I_{DR} (pulse) ^{Note1}	640	A
Avalanche current	I_{AP} ^{Note2}	65	A
Avalanche energy	E_{AR} ^{Note2}	362	mJ
Channel dissipation	P_{ch} ^{Note3}	192	W
Channel temperature	T_{ch} ^{Note4}	175	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
 2. $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$
 3. $T_c = 25^\circ\text{C}$
 4. AEC-Q101 compliant

Thermal Impedance Characteristics

- Channel to case thermal impedance θ_{ch-c} : 0.781°C/W

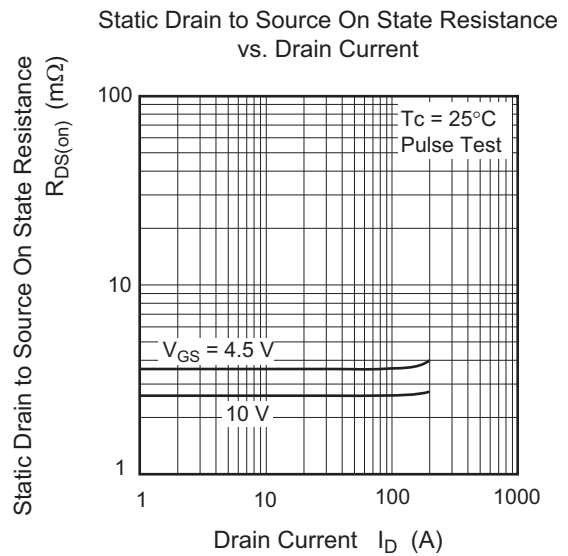
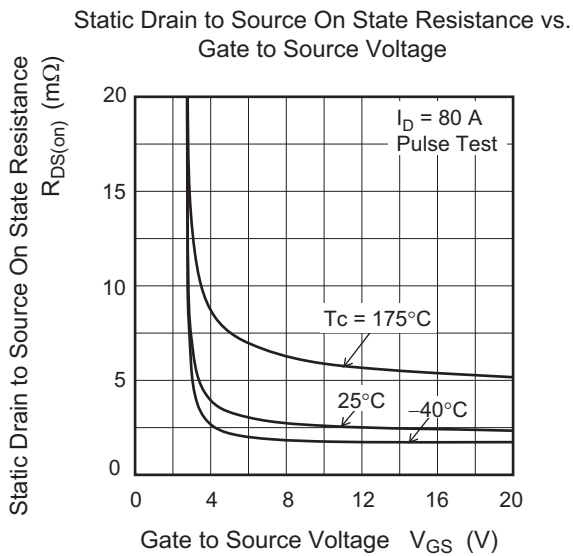
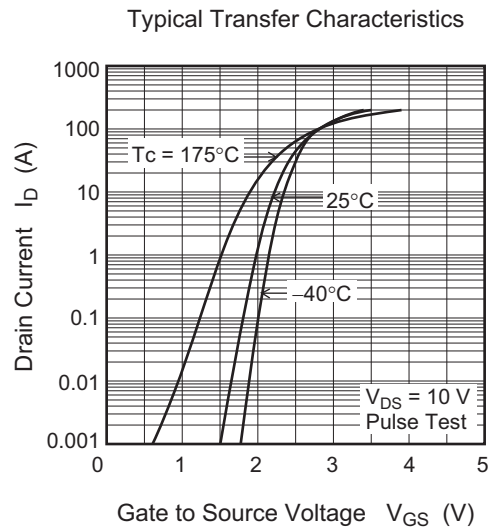
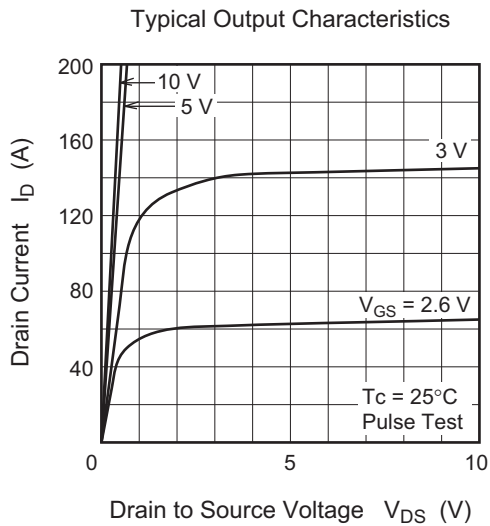
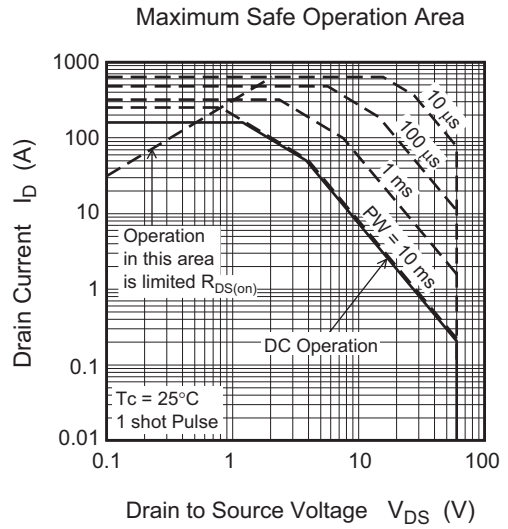
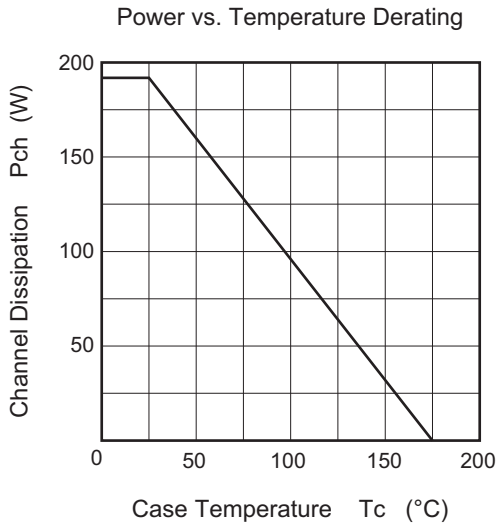
Electrical Characteristics

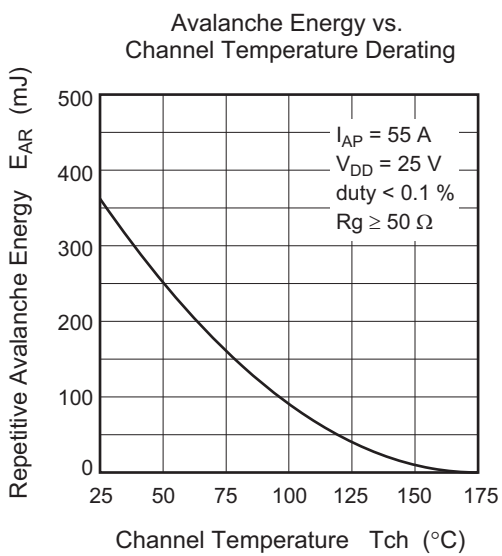
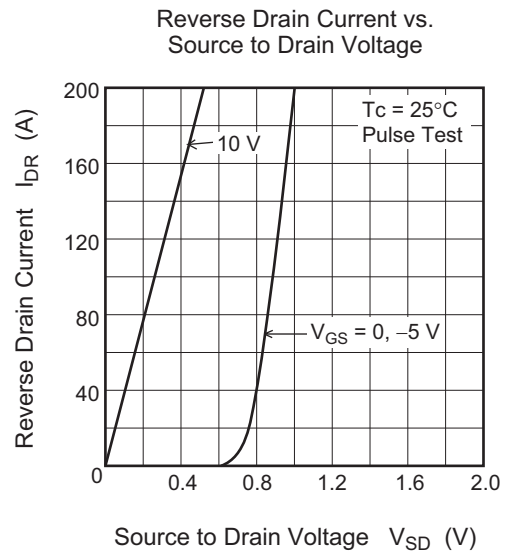
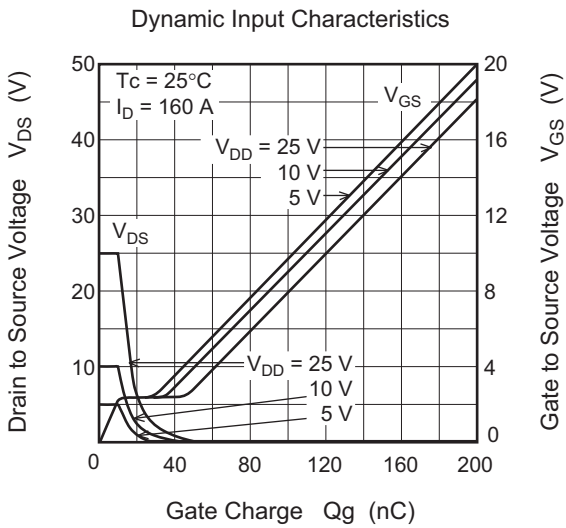
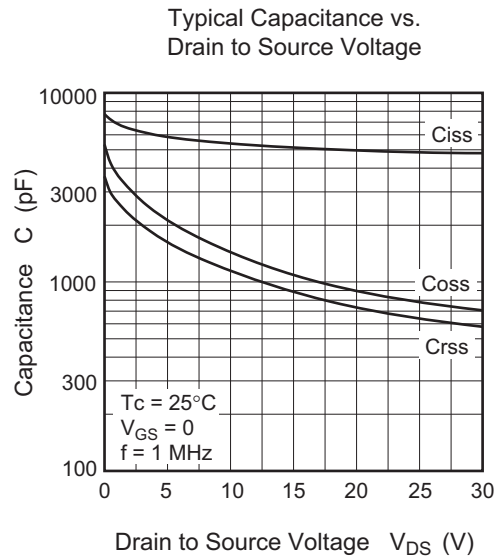
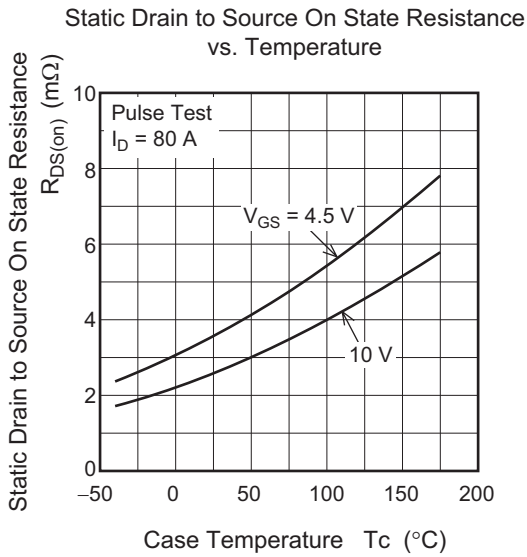
(Ta = 25°C)

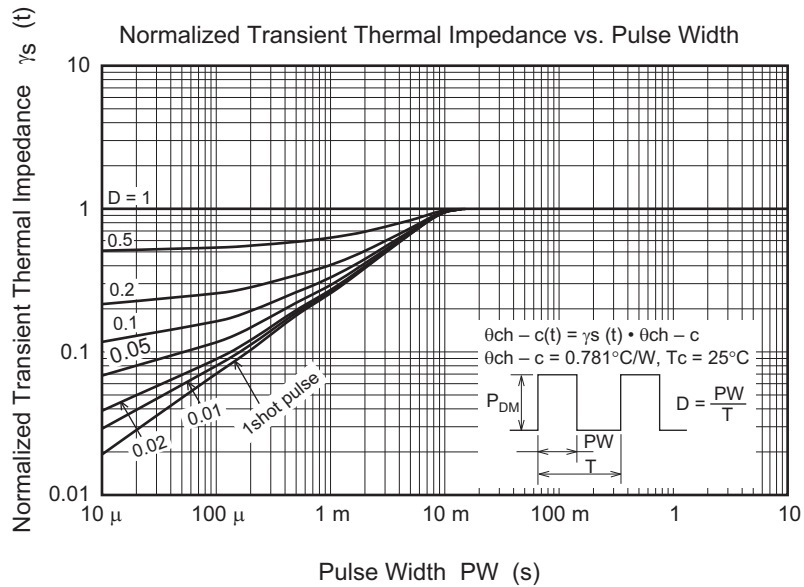
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = +20/-5 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 60 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.0	—	2.0	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS(on)}	—	2.6	3.2	mΩ	I _D = 80 A, V _{GS} = 10 V ^{Note5}
	R _{DS(on)}	—	3.6	4.9	mΩ	I _D = 80 A, V _{GS} = 4.5 V ^{Note5}
Input capacitance	C _{iss}	—	5400	—	pF	V _{DS} = 10 V, V _{GS} = 0 f = 1 MHz
Output capacitance	C _{oss}	—	1400	—	pF	
Reverse transfer capacitance	C _{rss}	—	1100	—	pF	
Total gate charge	Q _g	—	120	—	nC	V _{DD} = 25 V, V _{GS} = 10 V, I _D = 80 A
Gate to source charge	Q _{gs}	—	15	—	nC	
Gate to drain charge	Q _{gd}	—	35	—	nC	
Turn-on delay time	t _{d(on)}	—	20	—	ns	I _D = 80 A, R _L = 0.375 Ω V _{GS} = 10 V, R _G = 4.7 Ω
Rise time	t _r	—	45	—	ns	
Turn-off delay time	t _{d(off)}	—	120	—	ns	
Fall time	t _f	—	60	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.96	1.25	V	I _F = 160 A, V _{GS} = 0 ^{Note5}
Body-drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = 80 A, V _{GS} = 0, di _F /dt = 100 A/μs

Note: 5. Pulse test

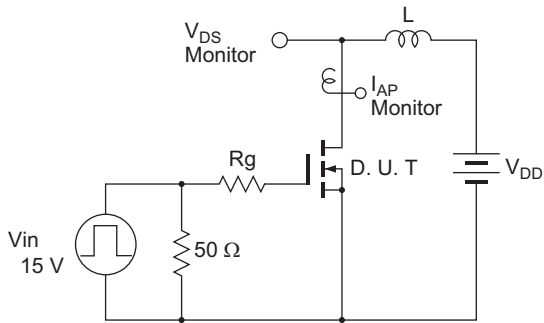
Main Characteristics



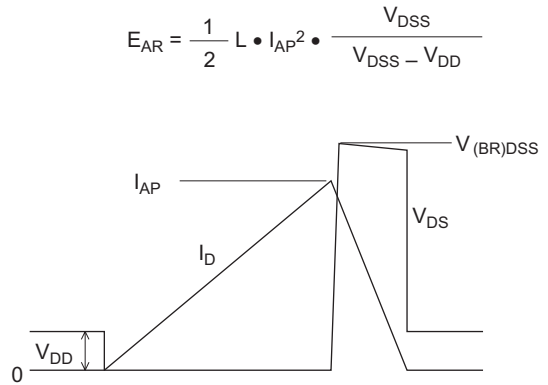




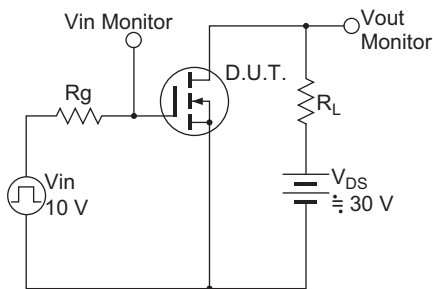
Avalanche Test Circuit



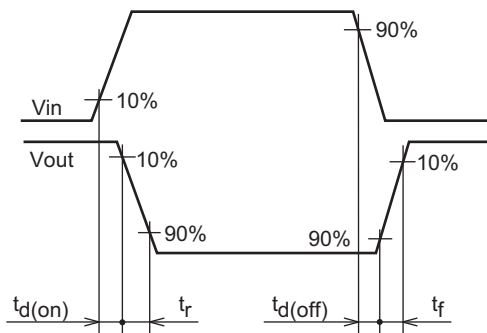
Avalanche Waveform



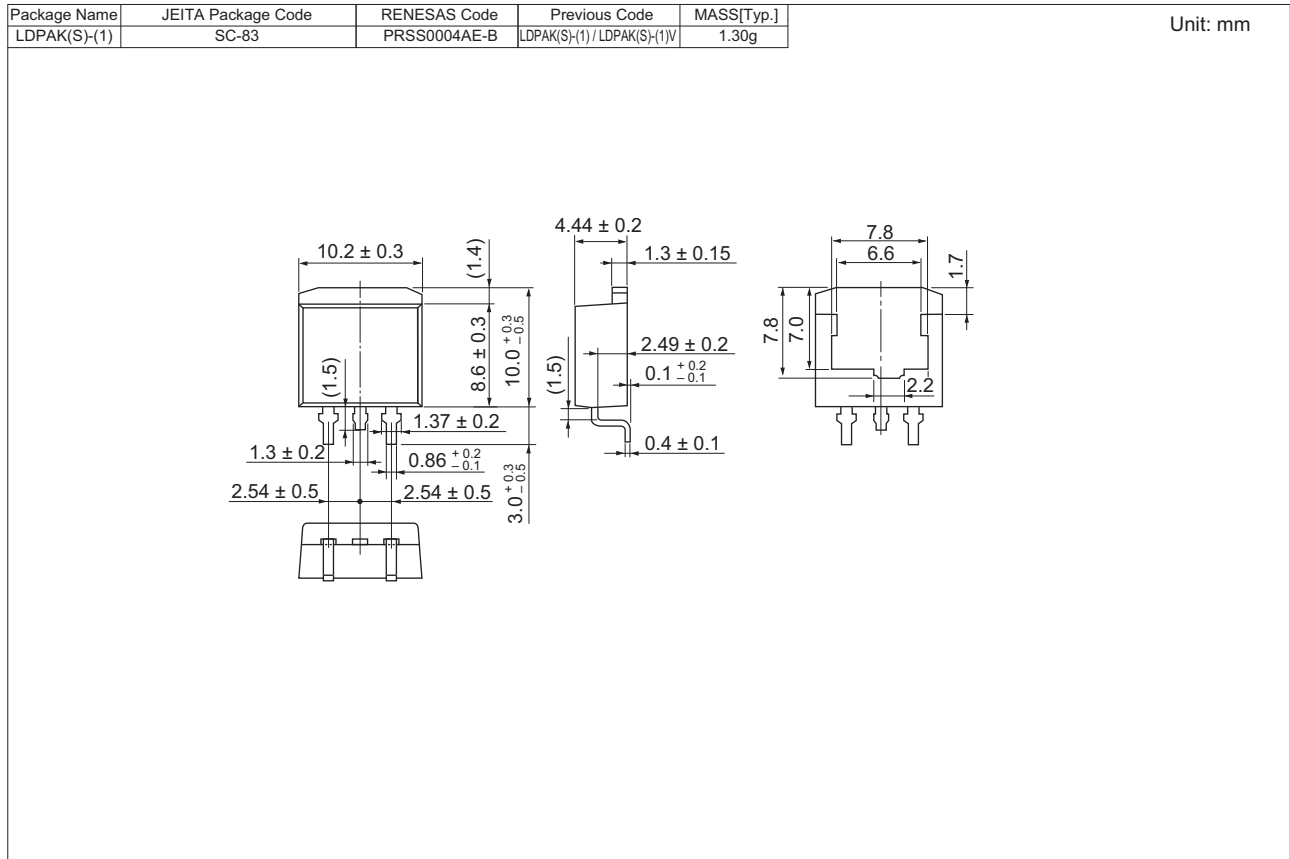
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK0628JPE-00-J3	1000 pcs	Taping (Sinistrorse)

Note: The symbol of 2nd "-" is occasionally presented as "#".

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