

# 2SK2116, 2SK2117

Silicon N Channel MOS FET

REJ03G0999-0200  
(Previous: ADE-208-1347)  
Rev.2.00  
Sep 07, 2005

## Application

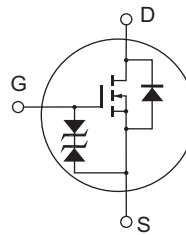
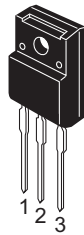
High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for Switching regulator

## Outline

RENESAS Package code: PRSS0003AE-A  
(Package name: TO-220C•FM)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit	
Drain to source voltage	2SK2116	V <sub>DSS</sub>	450	V
	2SK2117	V <sub>DSS</sub>	500	
Gate to source voltage	V <sub>GSS</sub>	±30	V	
Drain current	I <sub>D</sub>	7	A	
Drain peak current	I <sub>D(pulse)</sub> *1	28	A	
Body to drain diode reverse drain current	I <sub>DR</sub>	7	A	
Channel dissipation	P <sub>ch</sub> *2	35	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. Value at Tc = 25°C

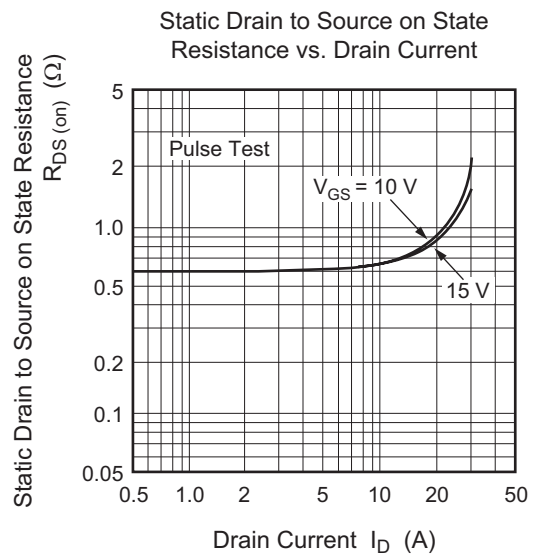
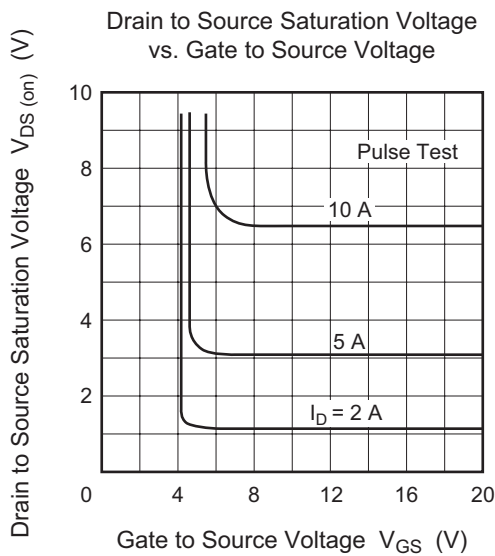
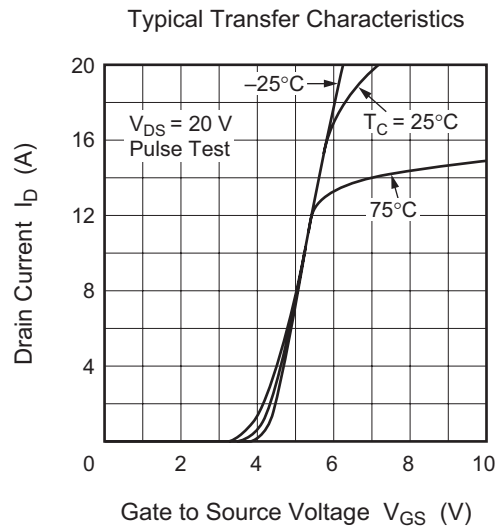
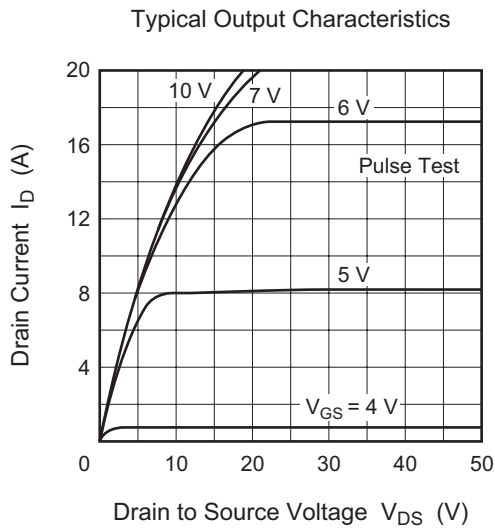
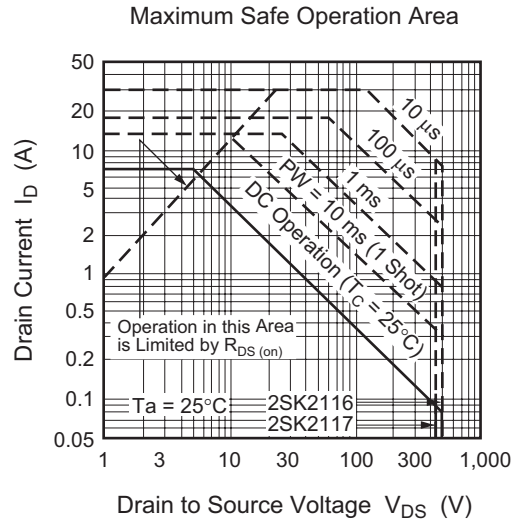
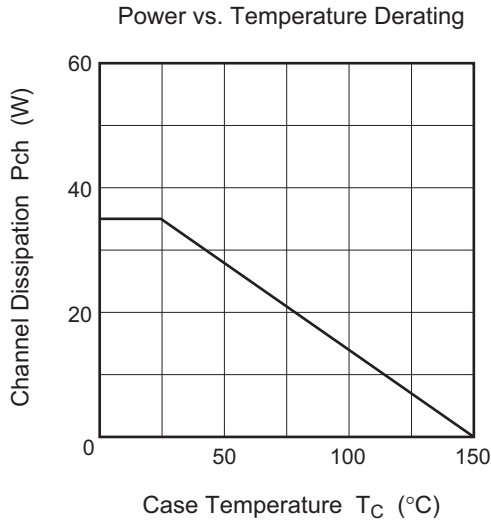
## Electrical Characteristics

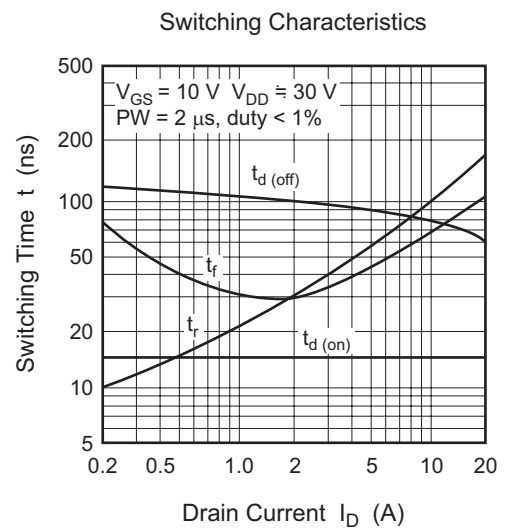
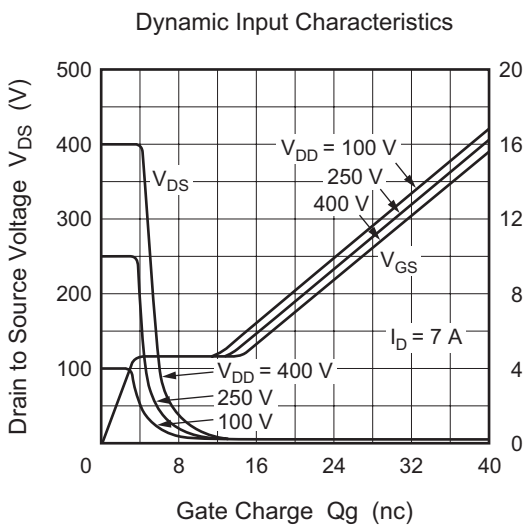
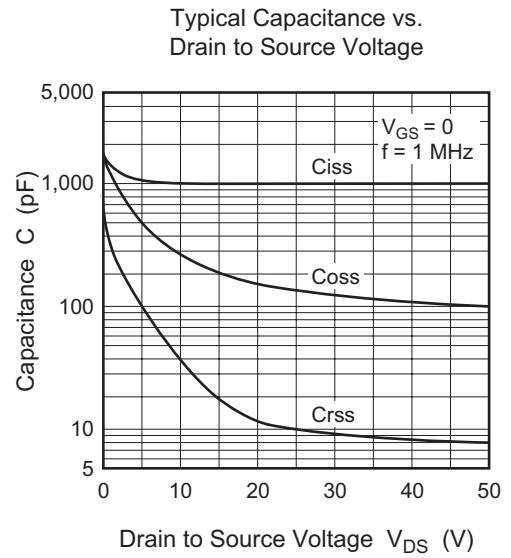
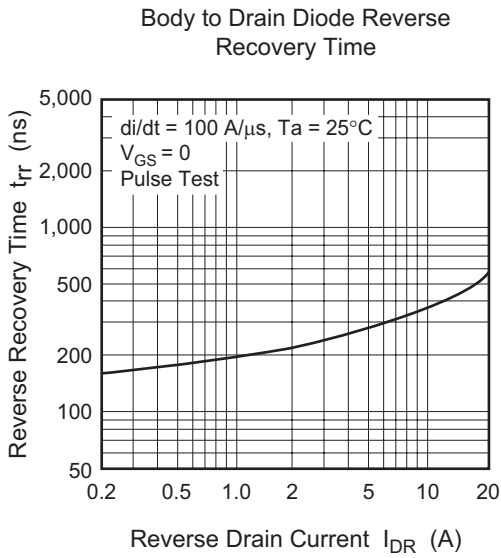
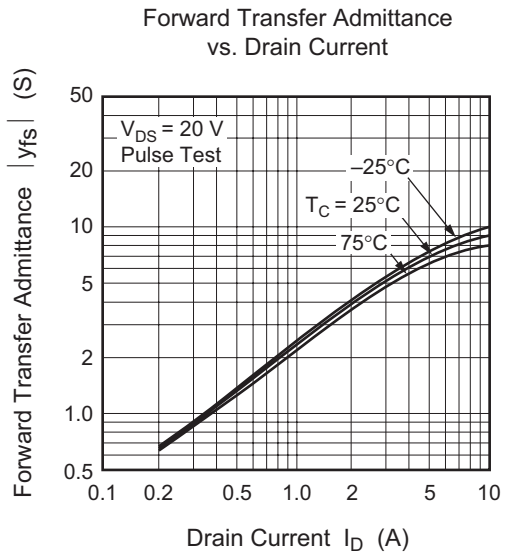
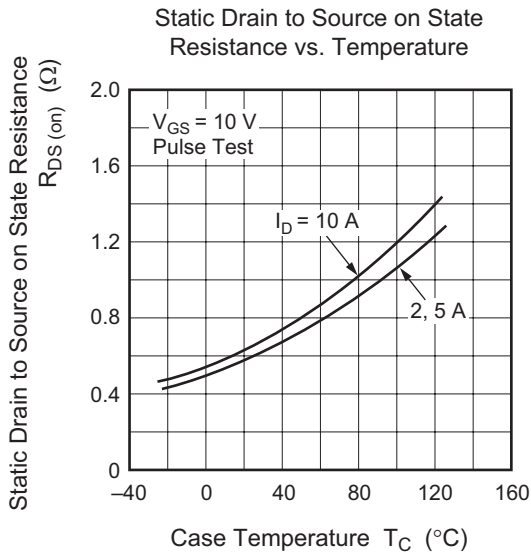
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions	
Drain to source breakdown voltage	2SK2116	V <sub>(BR)DSS</sub>	450	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
	2SK2117		500				
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±30	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0	
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0	
Zero gate voltage drain current	2SK2116	I <sub>DSS</sub>	—	—	250	μA	V <sub>DS</sub> = 360 V, V <sub>GS</sub> = 0
	2SK2117						V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	2.0	—	3.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V	
Static drain to source on state resistance	2SK2116	R <sub>DS(on)</sub>	—	0.6	0.8	Ω	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V*3
	2SK2117			0.7	0.9		
Forward transfer admittance	y <sub>fs</sub>	4.0	6.5	—	S	I <sub>D</sub> = 4 A, V <sub>DS</sub> = 10 V*3	
Input capacitance	C <sub>iSS</sub>	—	1050	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 MHz	
Output capacitance	C <sub>oSS</sub>	—	280	—	pF		
Reverse transfer capacitance	C <sub>rSS</sub>	—	40	—	pF		
Turn-on delay time	t <sub>d(on)</sub>	—	15	—	ns	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 7.5 Ω	
Rise time	t <sub>r</sub>	—	55	—	ns		
Turn-off delay time	t <sub>d(off)</sub>	—	95	—	ns		
Fall time	t <sub>f</sub>	—	40	—	ns		
Body to drain diode forward voltage	V <sub>DF</sub>	—	0.95	—	V	I <sub>F</sub> = 7 A, V <sub>GS</sub> = 0	
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	320	—	ns	I <sub>F</sub> = 7 A, V <sub>GS</sub> = 0, di <sub>F</sub> / dt = 100 A / μs	

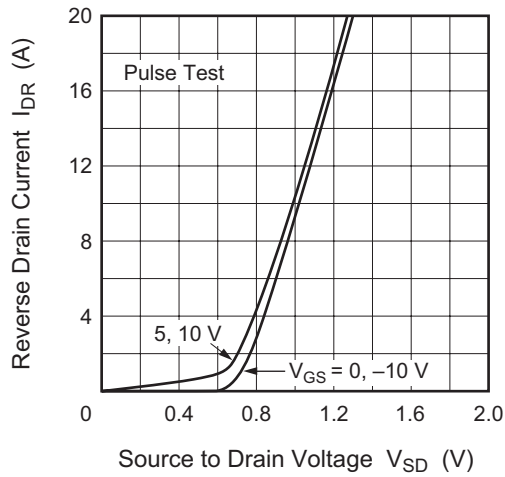
Note: 3. Pulse Test

### Main Characteristics

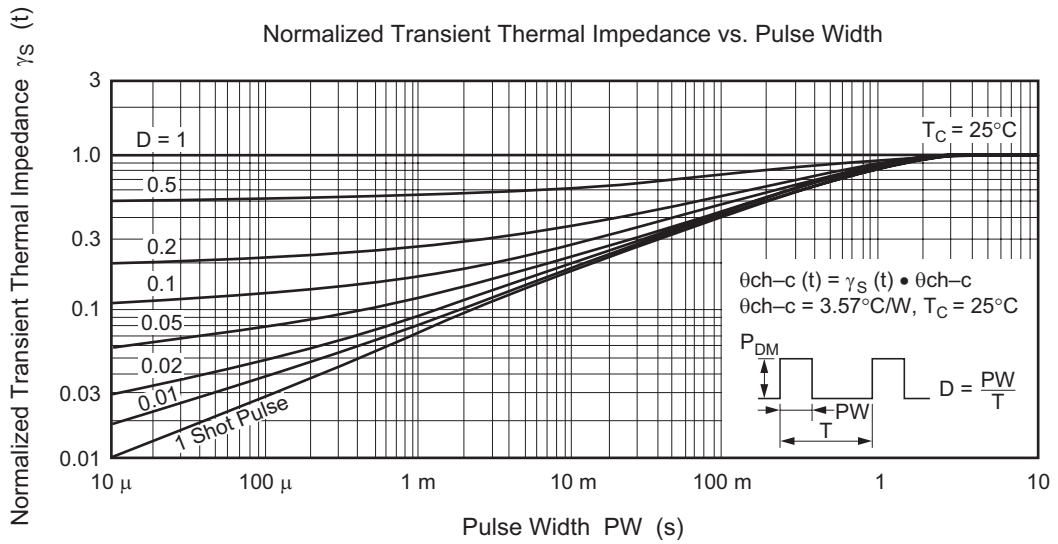




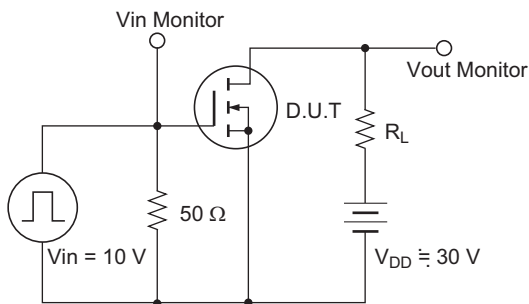
Reverse Drain Current vs. Source to Drain Voltage



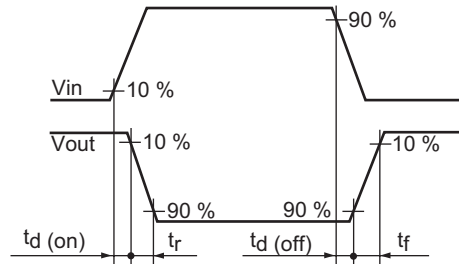
Normalized Transient Thermal Impedance vs. Pulse Width



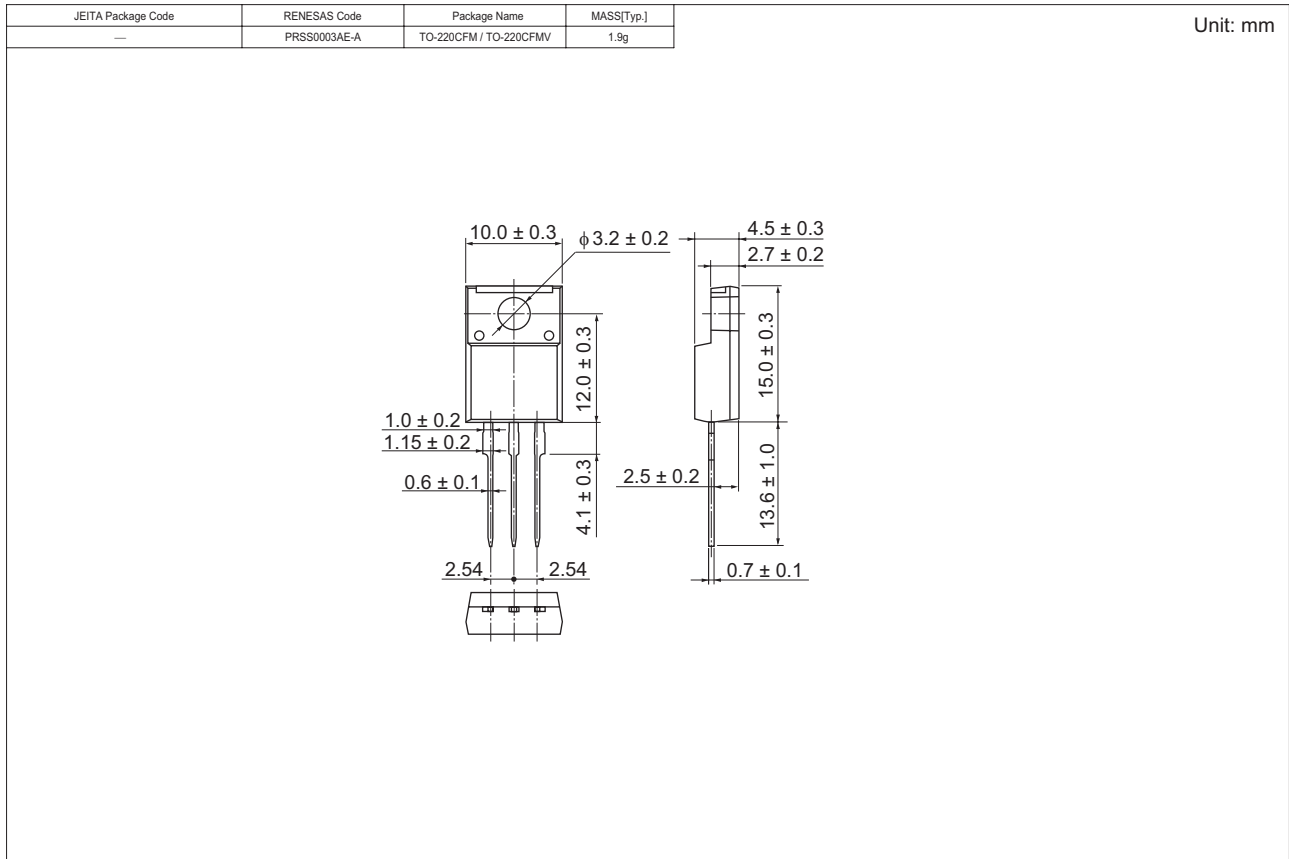
Switching Time Test Circuit



Waveforms



## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK2116-E	600 pcs	Box (Tube)
2SK2117-E	600 pcs	Box (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.

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