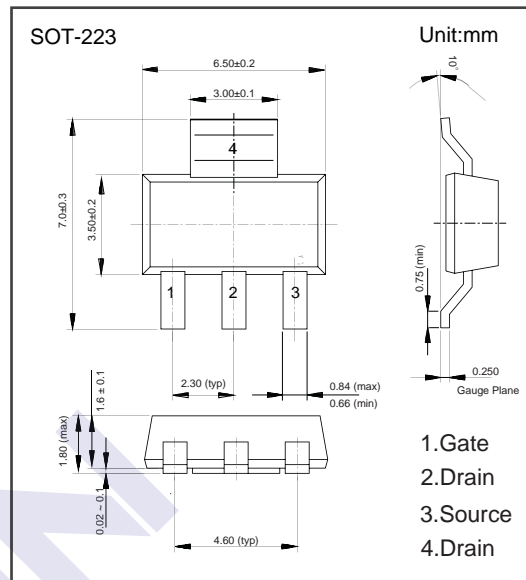
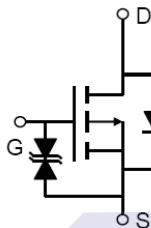


## P-Channel MOSFET

## 2KJ6031

## ■ Features

- $V_{DS} (V) = -100V$
- $I_D = -3.0A$
- $R_{DS(ON)} < 200m\Omega$  @  $V_{GS} = -10V$  (Typ:  $170m\Omega$ )
- $R_{DS(ON)} < 230m\Omega$  @  $V_{GS} = -4.5V$  (Typ:  $200m\Omega$ )
- Super high dense cell design
- Advanced trench process technology
- Reliable and rugged
- High density cell design for ultra low on-resistance

■ Absolute Maximum Ratings (T<sub>c</sub> = 25°C Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	±20	
Continuous Drain Current	$I_D$	-3	A
Continuous Drain Current (T <sub>c</sub> =100°C)		-2.1	
Pulsed Drain Current	$I_{DM}$	-20	
Power Dissipation	$P_D$	3.1	W
Thermal Resistance, Junction- to-Ambient	$R_{\theta JA}$	40	°C/W
Junction Temperature	$T_J$	150	°C
Junction Storage Temperature Range	$T_{stg}$	-55 to 150	

Note 1. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

## P-Channel MOSFET

## 2KJ6031

■ Electrical Characteristics (T<sub>c</sub> = 25°C Unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V	-100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±10	
<b>On Characteristics (Note 1)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1	-1.9	-3	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A		170	200	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A		200	230	
Forward Transconductance (Note 1)	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3A	2			S
<b>Dynamic Characteristics (Note 2)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-25V, f=1MHz		760		pF
Output Capacitance	C <sub>oss</sub>			260		
Reverse Transfer Capacitance	C <sub>rss</sub>			170		
<b>Switching Characteristics (Note 2)</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-50V, I <sub>D</sub> =-3A, V <sub>GS</sub> = -10V		25		nC
Gate Source Charge	Q <sub>gs</sub>			5		
Gate Drain Charge	Q <sub>gd</sub>			7		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-50V, I <sub>D</sub> =-3A, V <sub>GS</sub> = -10 V, R <sub>GEN</sub> = 9 Ω		14		ns
Turn-On Rise Time	t <sub>r</sub>			18		
Turn-Off Delay Time	t <sub>d(off)</sub>			50		
Turn-Off Fall Time	t <sub>f</sub>			19		
<b>Drain-Source Diode Characteristics</b>						
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-3	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>SD</sub> =-3 A, V <sub>GS</sub> =0V			-1.2	V

Notes 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

2. Guaranteed by design, not subject to production

## ■ Marking

Marking	J6031 K***
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### P-Channel MOSFET

### 2KJ6031

■ Typical Electrical and Thermal Characteristics (Curves)

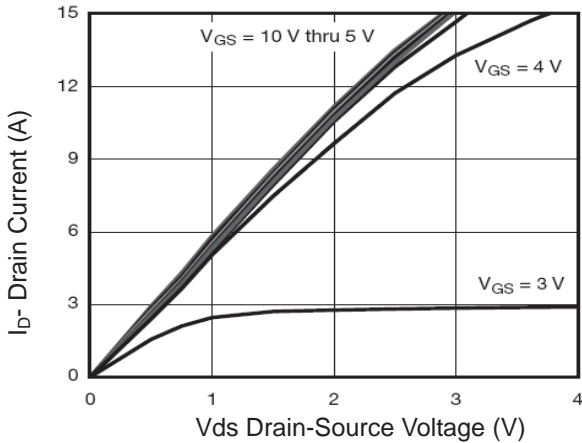


Figure 1 Output Characteristics

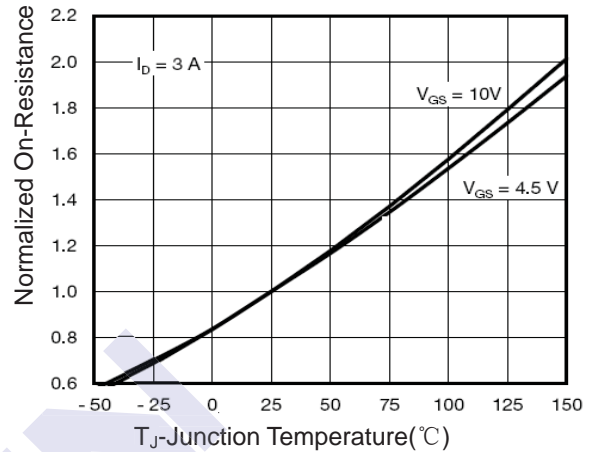


Figure 4  $R_{dson}$ -Junction Temperature

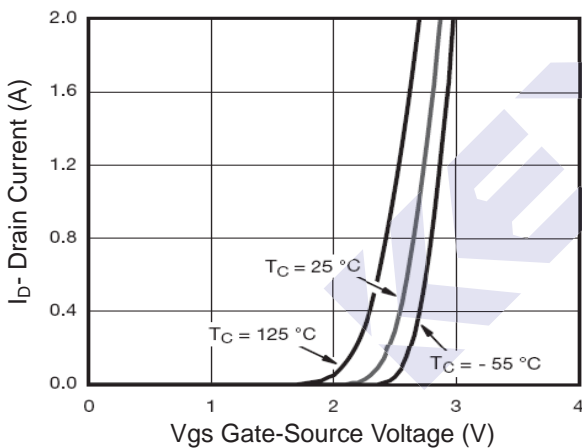


Figure 2 Transfer Characteristics

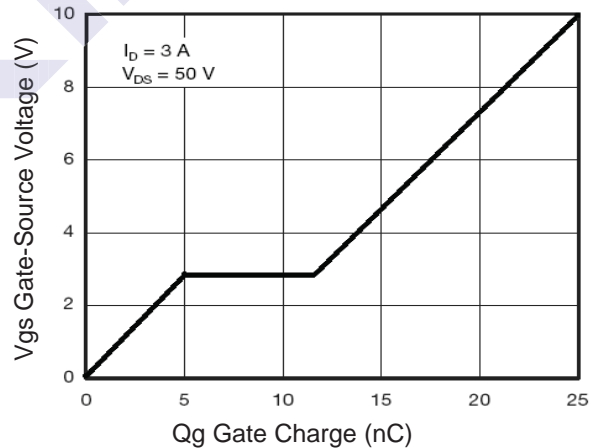


Figure 5 Gate Charge

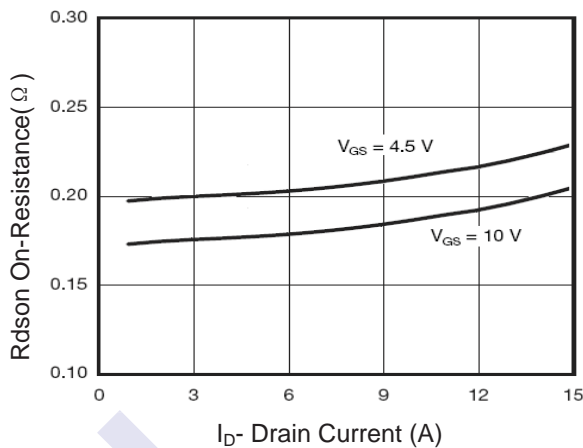


Figure 3  $R_{dson}$ - Drain Current

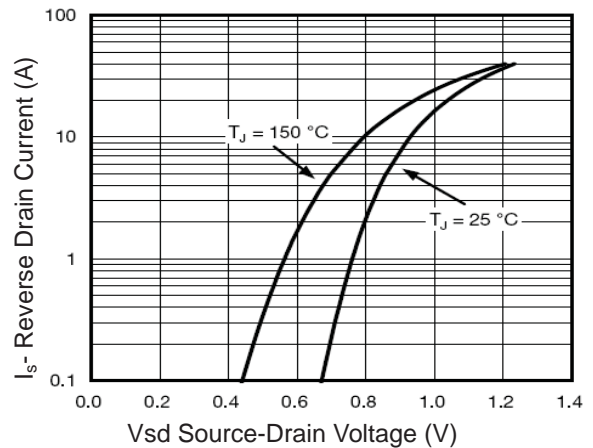


Figure 6 Source- Drain Diode Forward

P-Channel MOSFET

2KJ6031

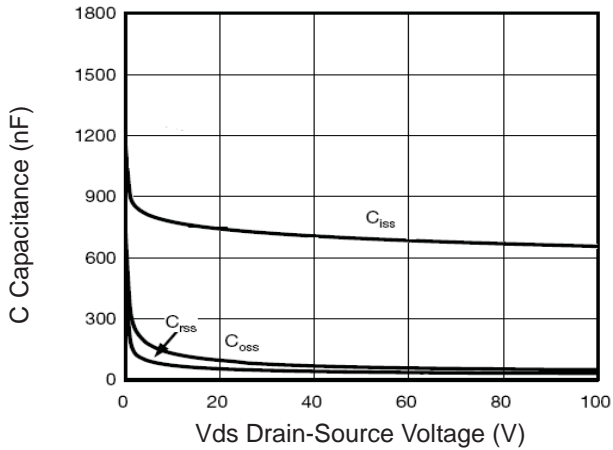


Figure 7 Capacitance vs Vds

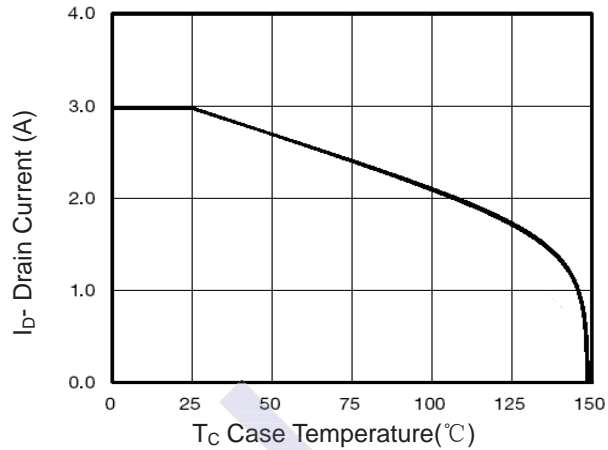


Figure 9 Drain Current vs Case Temperature

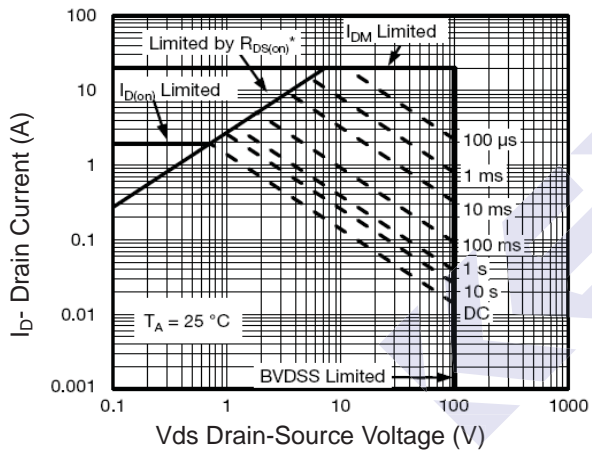


Figure 8 Safe Operation Area

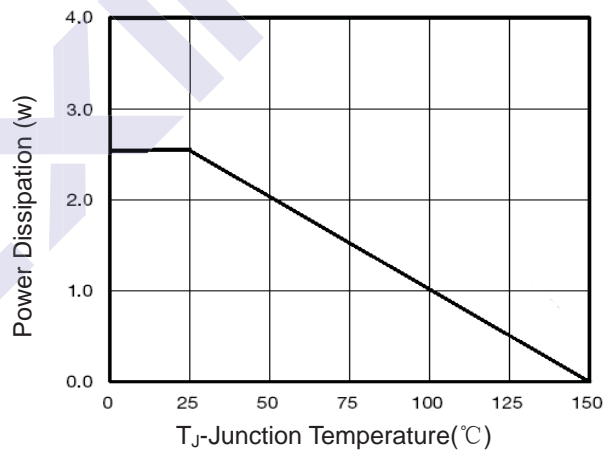


Figure 10 Power De-rating

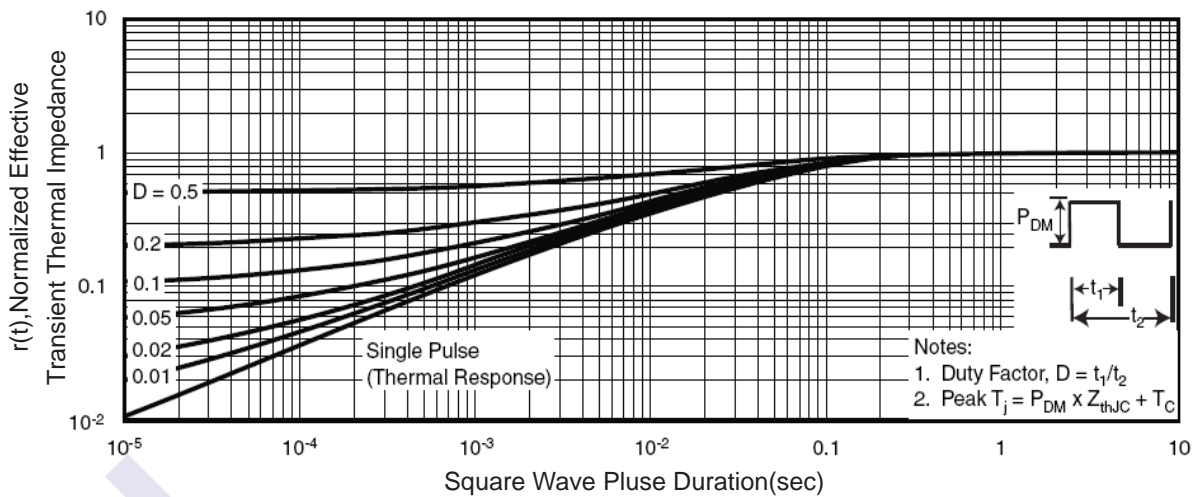


Figure 11 Normalized Maximum Transient Thermal Impedance