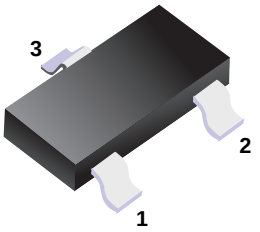
KRN3407

P-Enhancement Field Effect Transistor



1. Gate
2. Source
3. Drain

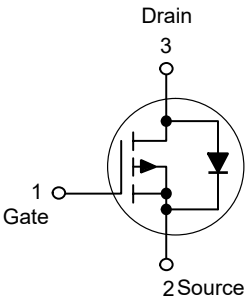
■ Features

- V_{DS}=-30V, I_D=-4.1A
  $R_{DS(on)}$=50mΩ (Typ.)@V_{GS}=-10V
- High density cell design for ultra low $R_{DS(ON)}$
- Low gate charge

■ Applications

- Load Switch and in PWM Applications

■ Simplified outline(SOT-23)



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Value	Units
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$-I_D$	4.1	A
Power Dissipation	P_D	1.4	W
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55 to 150	°C
Thermal Characteristics			
Parameter	**Symbol**	**Typ.**	**Units**
Maximum Junction-to-Ambient Note1	$R_{\theta JA}$	89	°C/W

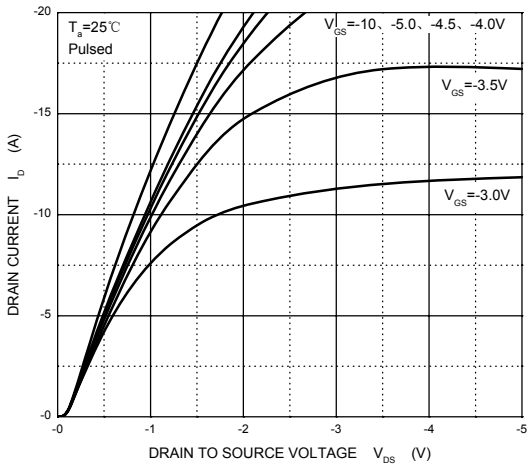
■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static Characteristics						
Drain-source breakdown voltage	$-V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	30			V
Zero gate voltage drain current	$-I_{DSS}$	V_{DS} =-24V,V_{GS} = 0V			1	μA
Gate-source leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Drain-source on-resistance Note2	$R_{DS(on)}$	V_{GS} =-10V, I_D =-4.1A		50	60	mΩ
		V_{GS} =-4.5V, I_D =-3A		68	87	mΩ
Gate threshold voltage Note2	$-V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	1	1.4	3	V
Forward tranconductance Note2	g_{FS}	V_{DS} =-5V, I_D =-4A	5.5			S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V,f =1MHz		700		pF
Output capacitance	C_{oss}			120		pF
Reverse transfer capacitance	C_{rss}			75		pF
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{GS}=-10V,V_{DS}=-15V, R_L=3.6Ω,R_{GEN}=3Ω		8.6		ns
Turn-on rise time	t_r			5.0		ns
Turn-off delay time	$t_{d(off)}$			28.2		ns
Turn-off fall time	t_f			13.5		ns
Source-Drain Diode Characteristics						
Diode forward voltage	V_{SD}	I_S=-1A,V_{GS}=0V			-1	V

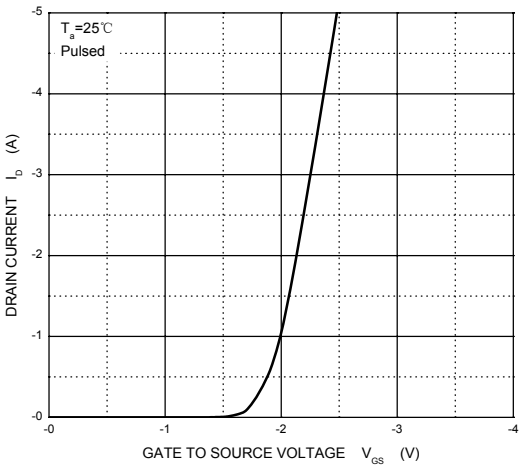
Notes:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.
2. Pulse test: Pulse width ≤300μs, duty cycle ≤2%.

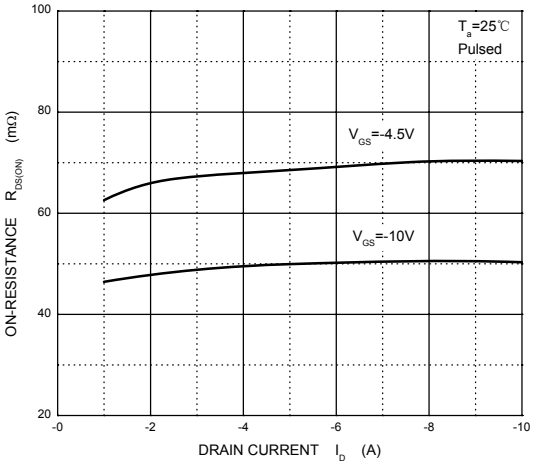
Output Characteristics



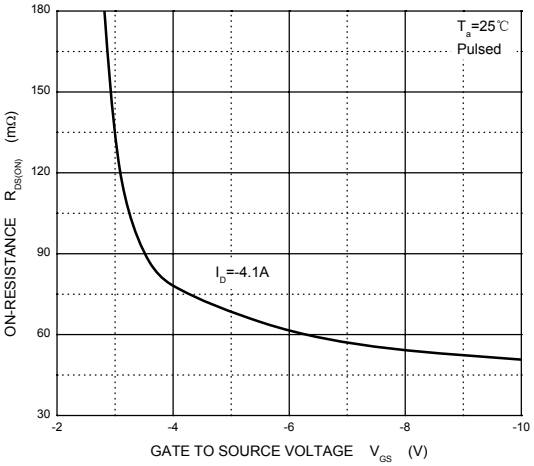
Transfer Characteristics



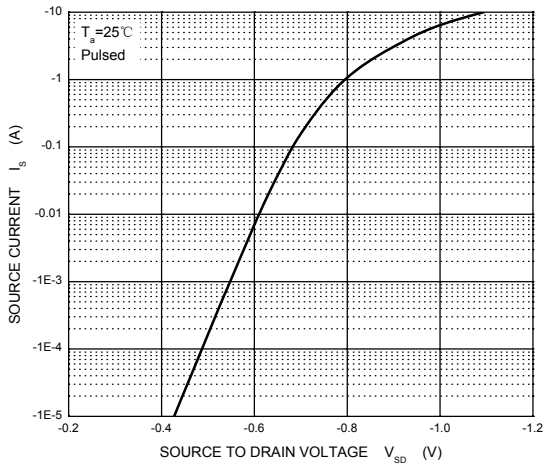
$R_{DS(ON)}$ — I_D



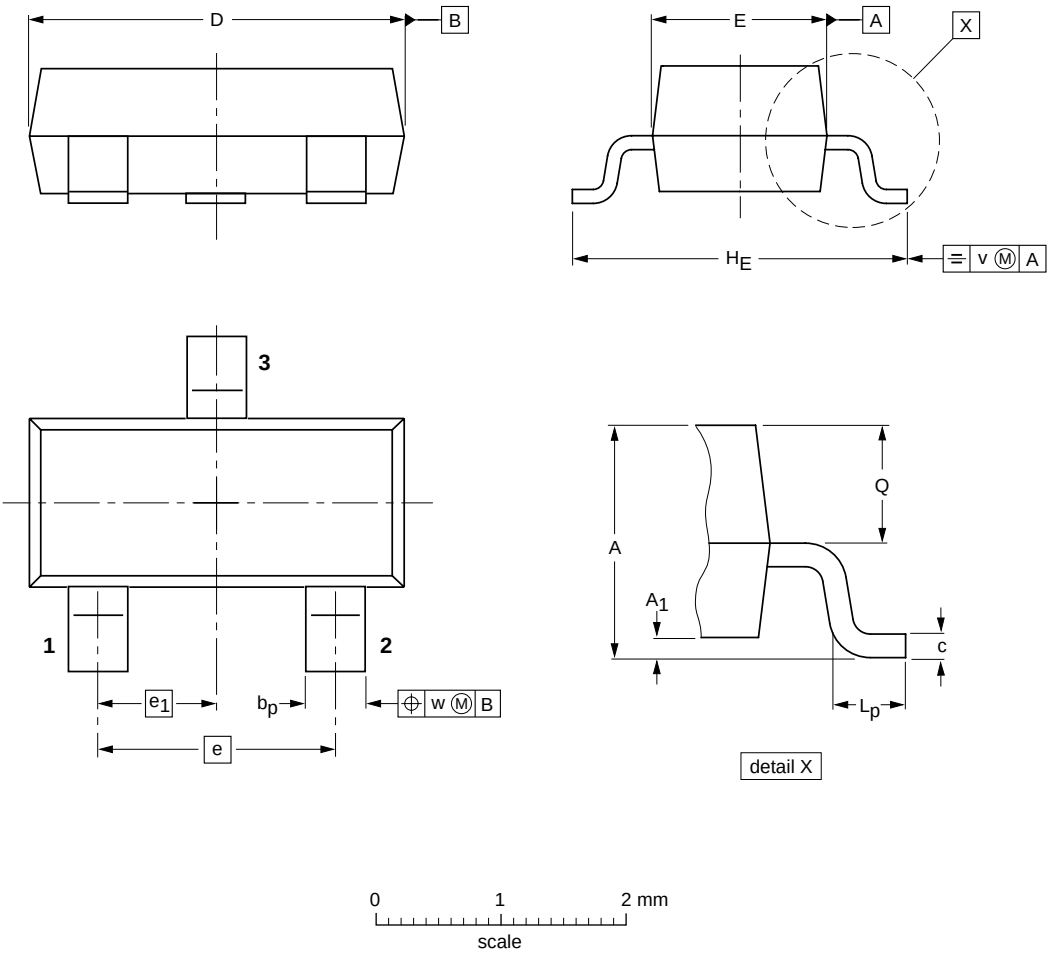
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1