KST2034N

20V N-Channel MOSFET

General Description

The KST2034N is the highest performance trench N-ch MOSFET with extreme high cell density , which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

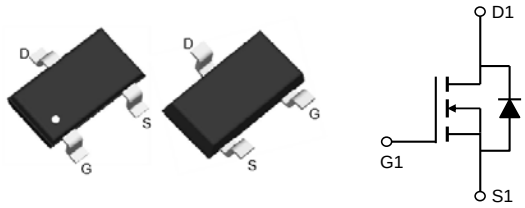
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
20	270 at V_{GS} = 4.5 V	0.8
	330 at V_{GS} = 2.5 V	0.65

Features

- Low On-Resistance
- Fast Switching Speed
- High-Side Switching

SOT-523 Pin Configuration



Applications

- Load/Power Switching Cell Phones
- Power Supply Converter Circuits
- Battery Operated Systems

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current – Continuous (T_C=25℃)	0.8	A
	Drain Current – Continuous (T_C=100℃)	0.12	A
I_{DM}	Drain Current – Pulsed[1]	2.5	A
P_D	Power Dissipation (T_C=25℃)	0.06	W
	Power Dissipation (T_C=100℃)	0.01	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	38	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2.76	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=12V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=12V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±10V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=0.8A	---	270	380	mΩ
		V_{GS}=2.5V , I_D=0.6A	---	330	450	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.35	0.72	1.1	V
gfs	Forward Transconductance	V_{DS}=5V , I_S=0.4A	---	10	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge	V_{DS}=10V , V_{GS}=5V , I_D=0.8A	---	3.7	---	nC
Q_{gs}	Gate-Source Charge		---	1.2	---	
Q_{gd}	Gate-Drain Charge		---	3.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=10V,R_L=3.3Ω V_{GS}=5V,R_G=6Ω	---	6.5	---	ns
T_r	Rise Time		---	4.1	---	
$T_{d(off)}$	Turn-Off Delay Time		---	18	---	
T_f	Fall Time		---	5.8	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	150	---	pF
C_{oss}	Output Capacitance		---	30	---	
C_{rss}	Reverse Transfer Capacitance		---	16	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	0.8	A
I_{SM}	Pulsed Source Current		---	---	2.0	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.0	V

Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics (Curves)

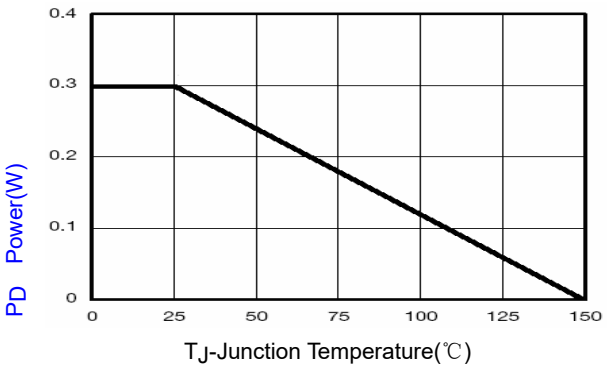


Figure 3 Power Dissipation

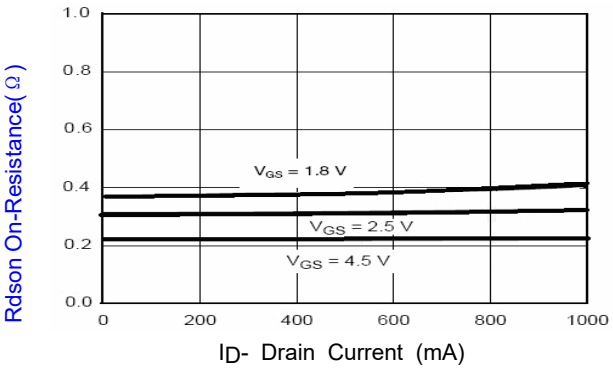


Figure 4 Drain-Source On-Resistance

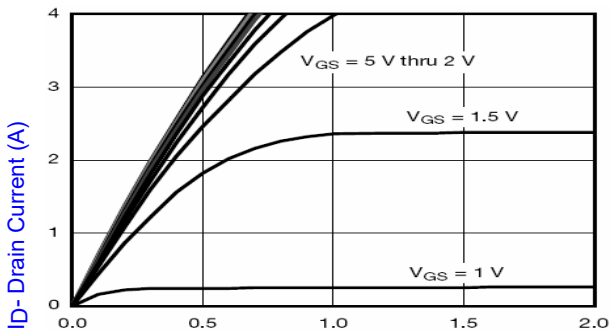


Figure 5 Output Characteristics

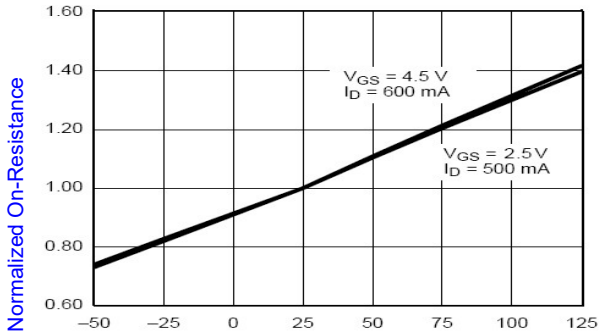


Figure 6 Drain-Source On-Resistance

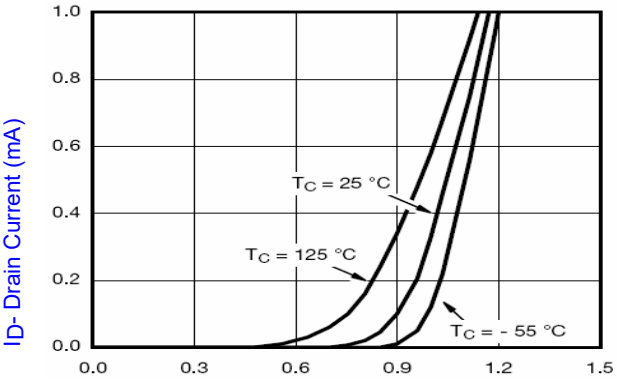


Figure 7 Transfer Characteristics

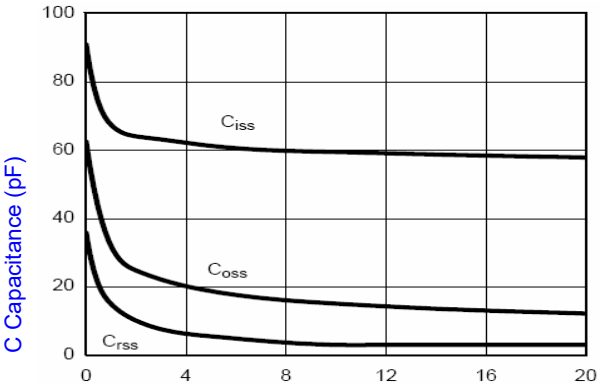


Figure 8 Capacitance vs Vds

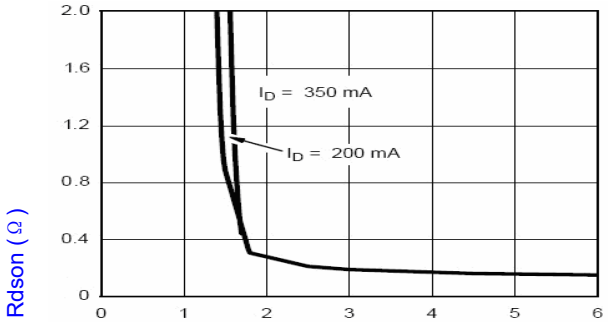


Figure 9 Rdson vs Vgs

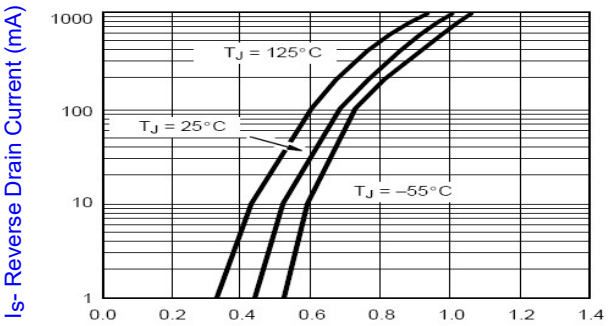


Figure 10 Source- Drain Diode Forward

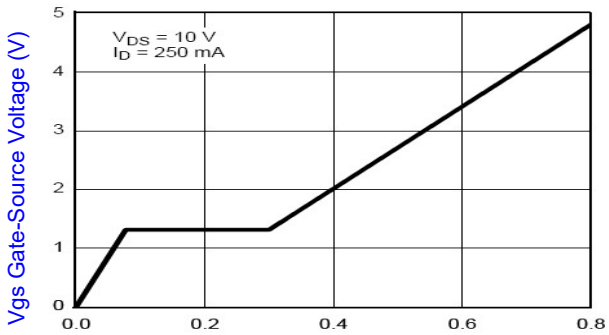


Figure 11 Gate Charge

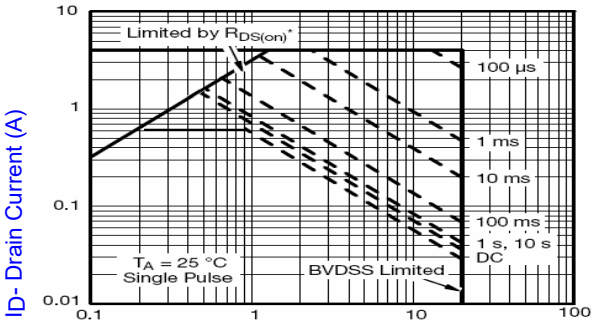


Figure 12 Safe Operation Area

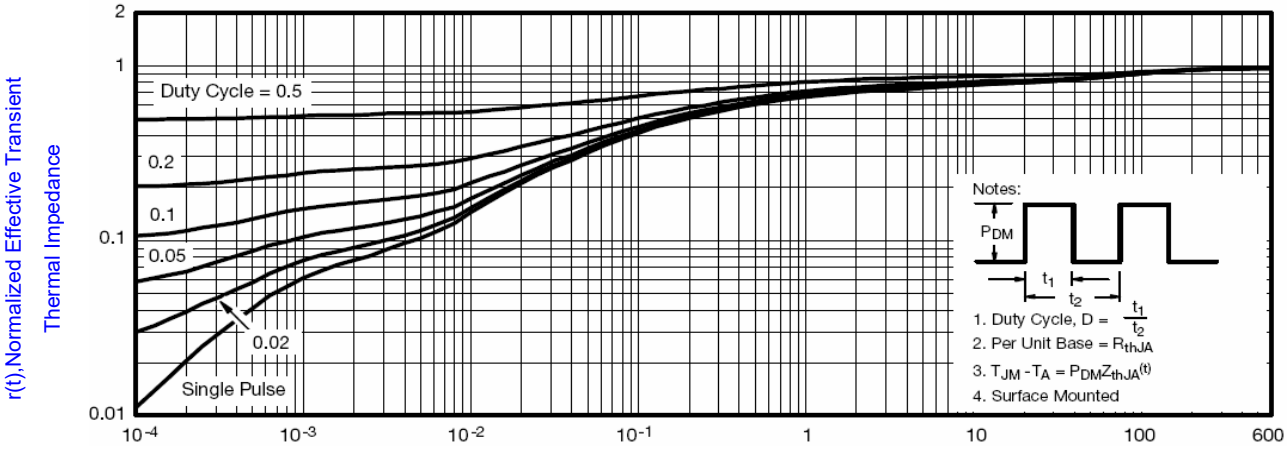


Figure 13 Normalized Maximum Transient Thermal Impedance

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