KST2361W

-20V Dual P-Channel MOSFET

General Description

The KST2361W uses advanced trench technology to provide excellent RDS(ON), low gate charge, and operation with gate voltages as low as 1.8V, in the small SOT363 footprint. It can be used for a wide variety of applications, including load switching, low current inverters and low current DC-DC converters

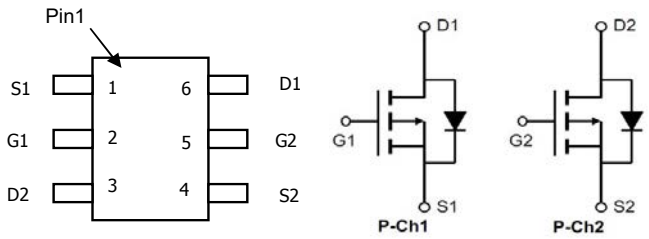
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
-20	180 at V_{GS} = 4.5 V	-1.0
	260 at V_{GS} = 2.5 V	-0.7

Features

- Surface Mount Package
- P-Channel Switch with Low R_{DS}(on)
- Low Threshold
- Lead Free Product is Acquired

SOT-363 Plastic-Encapsulate



Applications

- Load/Power Switching
- Interfacing Switching
- Logic Level Shift
- Power Supply Converter Circuits
- Battery Management for Ultra Small Portable Electronics

Absolute Maximum Ratings T_C=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±10	V
I_D	Drain Current – Continuous (T_C=25℃)	-1.0	A
	Drain Current – Continuous (T_C=100℃)	-0.5	A
I_{DM}	Drain Current – Pulsed[1]	-3.2	A
P_D	Power Dissipation (T_C=25℃)	0.35	W
	Power Dissipation (T_C=100℃)	0.009	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	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	0..67	℃/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	---	---	±20	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-1A	---	180	---	mΩ
		V_{GS}=-2.5V , I_D=-.05A	---	260	---	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	-0.45	-0.62	-1.0	V
gfs	Forward Transconductance	V_{DS}=5V , I_S=-0.5A	---	5.0	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge	V_{DS}=-10V , V_{GS}=-4.5V , I_D=0.3A	---	1.6	---	nC
Q_{gs}	Gate-Source Charge		---	0.19	---	
Q_{gd}	Gate-Drain Charge		---	0.45	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-10V,I_D=500mA, V_{GS}=-4.5V,R_G=10Ω	---	6.4	---	ns
T_r	Rise Time		---	5.3	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16	---	
T_f	Fall Time		---	5.4	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	160	---	pF
C_{oss}	Output Capacitance		---	14	---	
C_{rss}	Reverse Transfer Capacitance		---	13	---	

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	---	---	-0.4	A
I_{SM}	Pulsed Source Current		---	---	-1.2	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-0.5A , 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

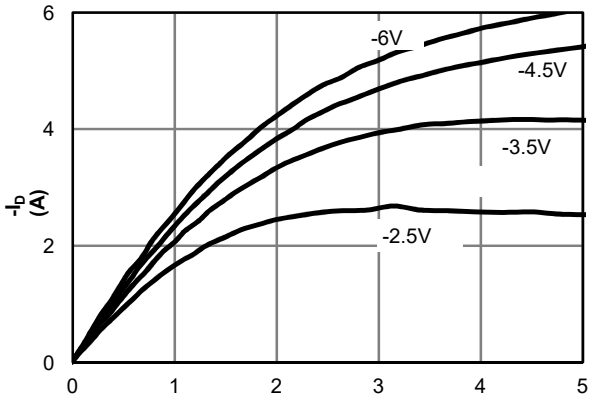


Fig 1: On-Region Characteristics

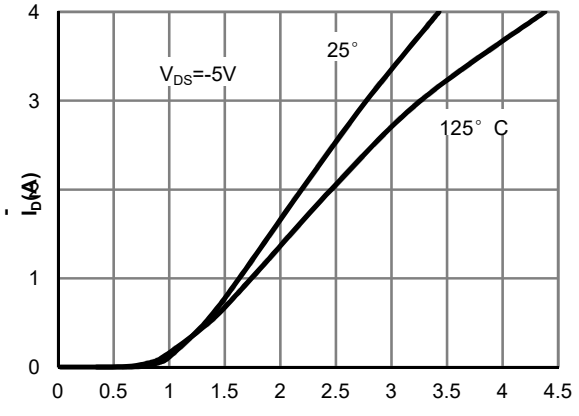


Figure 2: Transfer Characteristics

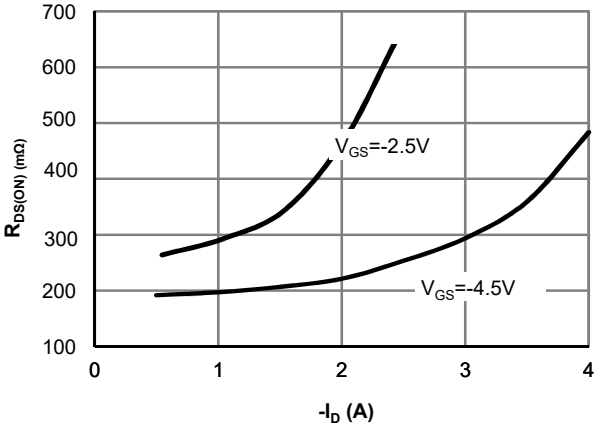


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

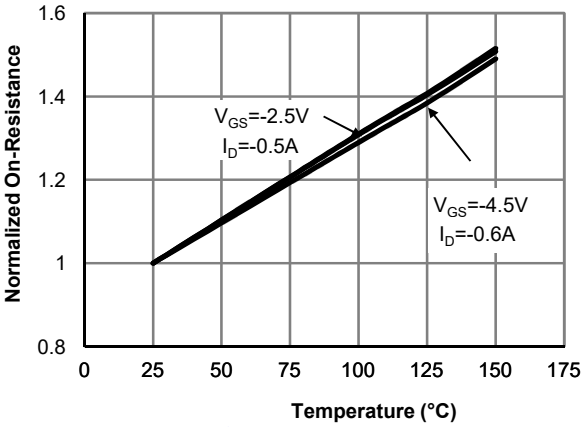


Figure 4: On-Resistance vs. Junction Temperature

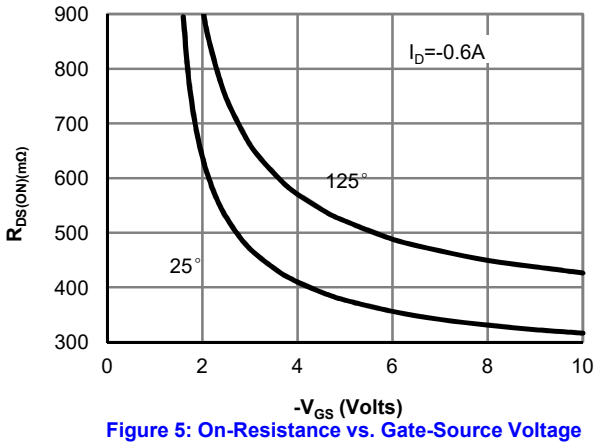


Figure 5: On-Resistance vs. Gate-Source Voltage

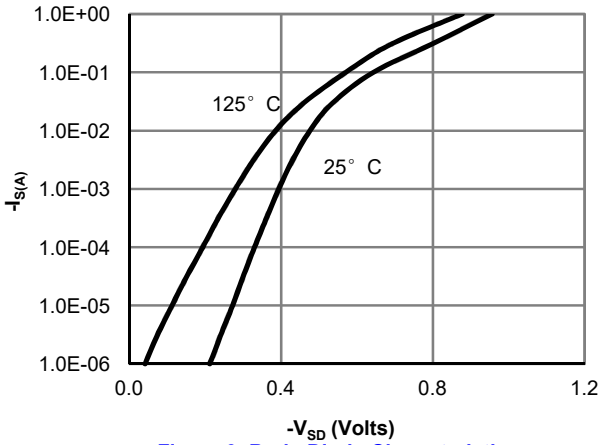


Figure 6: Body-Diode Characteristics

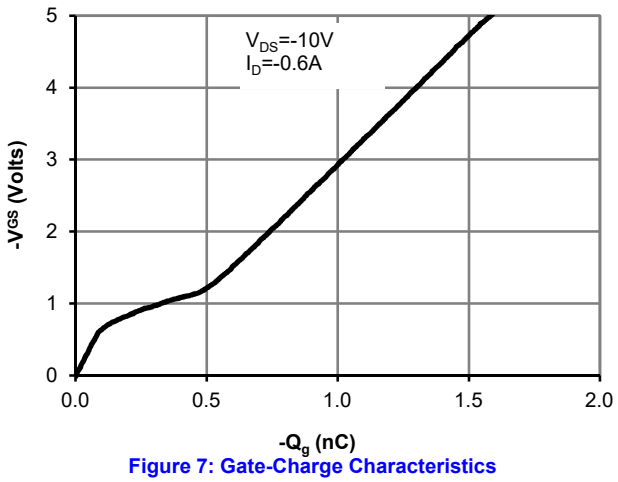


Figure 7: Gate-Charge Characteristics

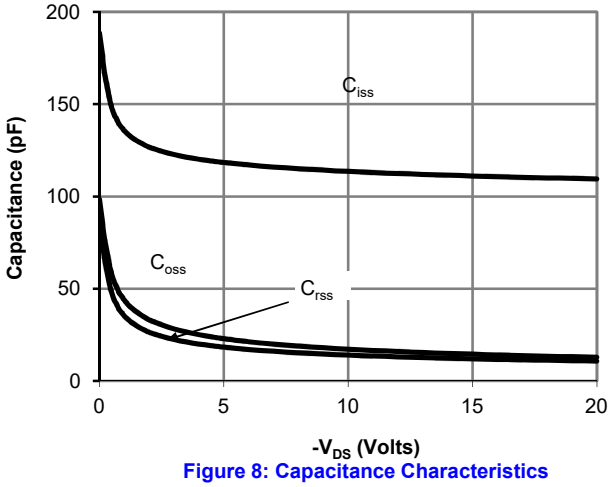


Figure 8: Capacitance Characteristics

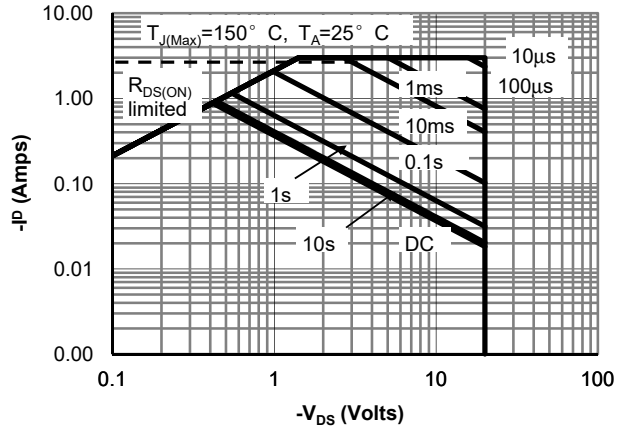
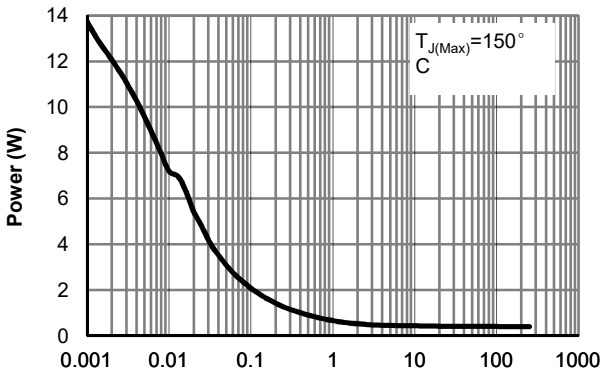


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)



Temperature (°C)
Figure 4: On-Resistance vs. Junction Temperature

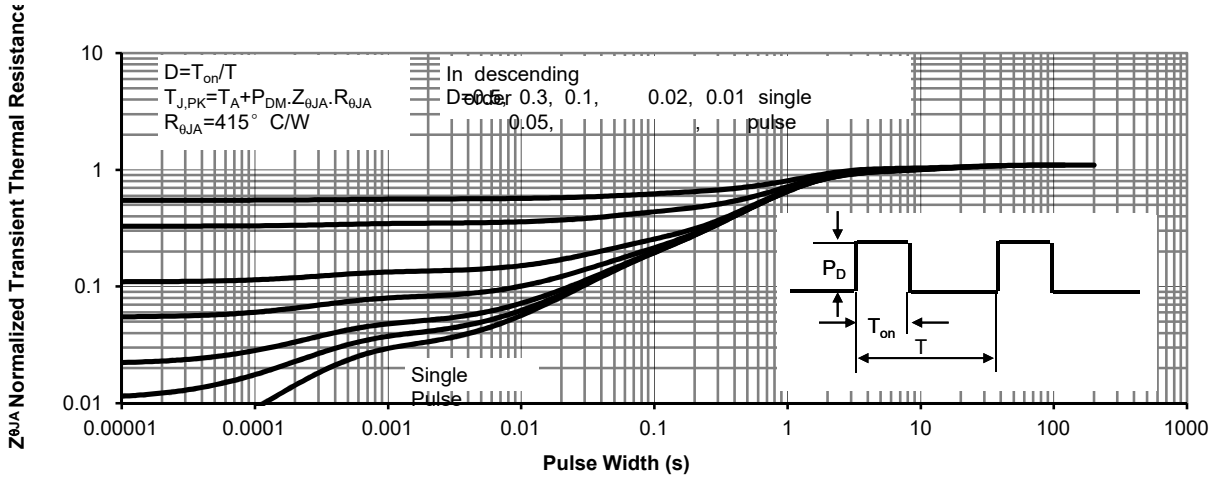


Figure 11: Normalized Maximum Transient Thermal Impedance

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