TL-2N7002KDW

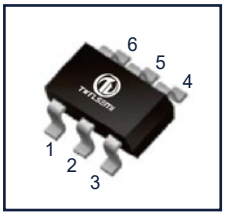
SOT-363 60V Dual N-Channel MOSFET

Description

The 2N7002KDW is a dual N-channel enhanced MOS field-effect transistor. Uses advanced trenchtech-nology and design to provide excellent Ros(ow, with low gate charge. Device is suitable for use inDC-DC conversion, power switch and charging circuit.

General Features

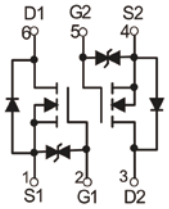
- High density cell design for Low RDS（on）
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected



SOT-363

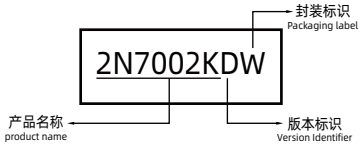
Applications

- Load Switch for Portable Devices
- DC/DC Converter



Equivalent Circuit

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
2N7002KDW	SOT-363		72K	3000

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous drain current (t ≤10s)	0.34	A
P_D	Power Dissipation	0.15	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	℃/W
T_J	Junction temperature	150	℃
T_{stg}	Storage temperature	-55~+150	℃

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
STATIC CHARACTERISTICS						
V_{DS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	60	---	---	V
$V_{GS(th)}$	Gate Threshold Voltage[1]	V_{DS}=V_{GS}, I_D=1mA	1	1.6	2.5	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V,V_{GS}= 0V	---	---	1	μA
I_{GSS1}	Gate -Source leakage current	V_{GS}=±20V, V_{DS}=0V	---	---	±10	μA
$R_{DS(on)}$	Drain-Source On-Resistance[1]	V_{GS}= 4.5V, I_D=200mA	---	1.1	3	Ω
		V_{GS}= 10V, I_D=500mA	---	2	2.5	
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=300mA	---	---	1.5	V
Q_r	Recovered charge	V_{GS}=0V,I_S=300mA,V_R=25V, dls/dt=-100A/μS	---	30	---	nC
DYNAMIC CHARACTERISTICS[2]						
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V,f=1MHz	---	---	40	pF
C_{oss}	Output Capacitance		---	---	30	
C_{rss}	Reverse Transfer Capacitance		---	---	10	
SWITCHING CHARACTERISTICS[2]						
$T_{d(on)}$	Turn-On Delay Time	V_{GS}=10V,V_{DD}=50V,R_G=50Ω, R_{GS}=50Ω, R_L=250Ω	---	---	10	ns
T_r	Rise Time		---	---	15	
T_{rr}	Reverse recovery Time	V_{GS}=0V,I_S=300mA,V_R=25V, dls/dt=-100A/μS	---	30	---	
GATE-SOURCE ZENER DIODE						
BV_{GSO}	Gate-Source Breakdown Voltage	I_{gs}=±1mA (Open Drain)	±21.5	---	±30	V

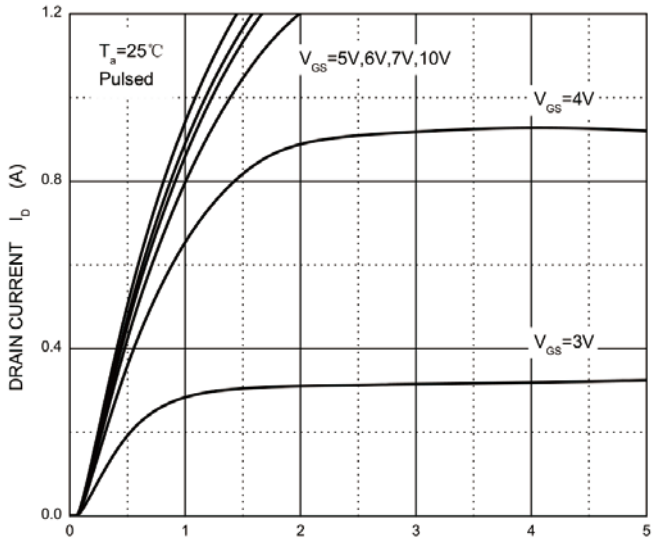
Notes :

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

2.These parameters have no way to verify.

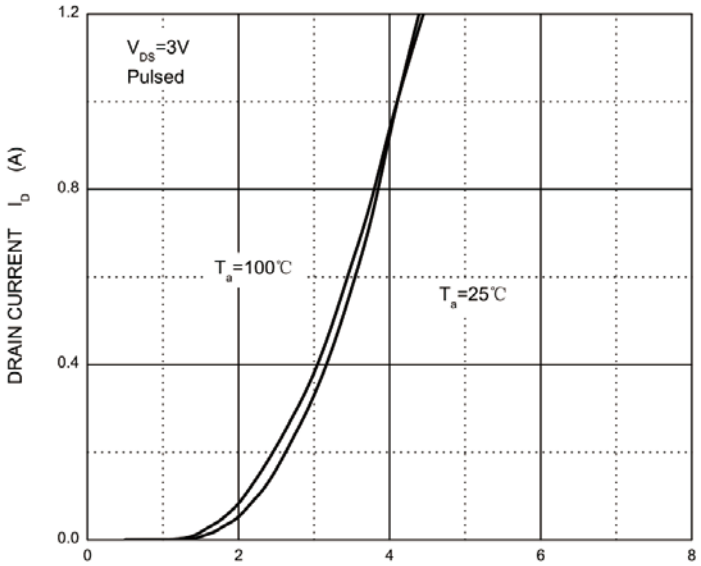
Typical Characteristics

Output Characteristics



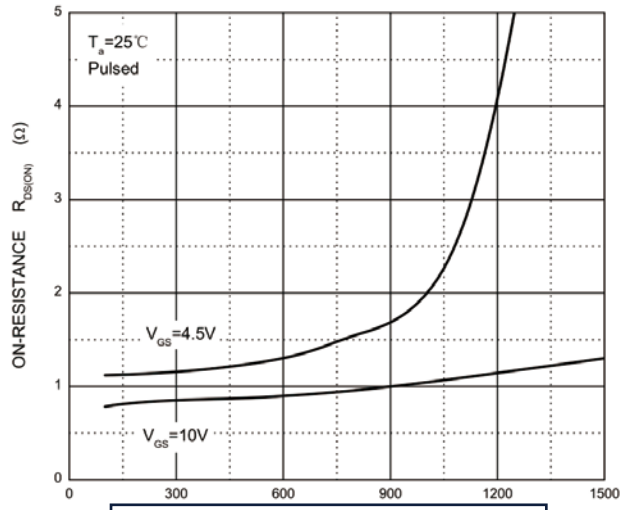
DRAIN TO SOURCE VOLTAGE VDS(V)

Transfer Characteristics



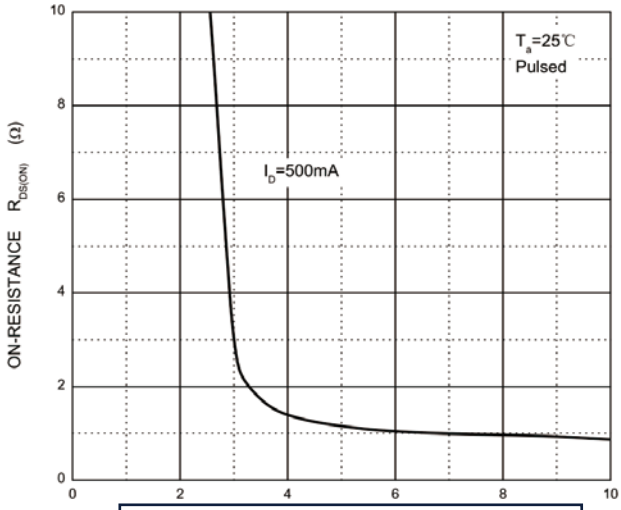
GATE TO SOURCE VOLTAGE VGS(V)

$R_{DS(ON)}$ — I_D



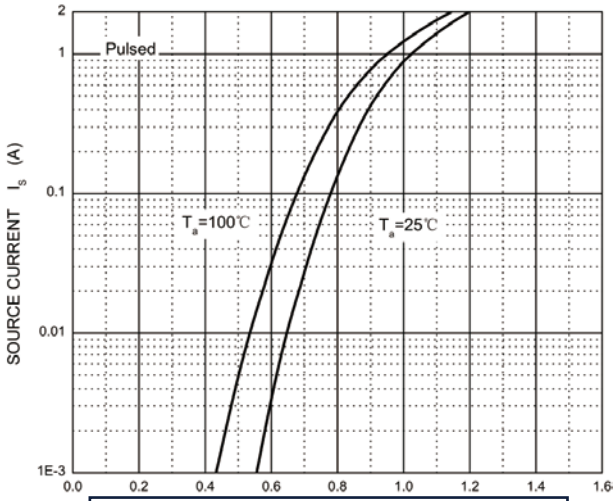
DRAIN CURRENT ID(A)

$R_{DS(ON)}$ — V_{GS}



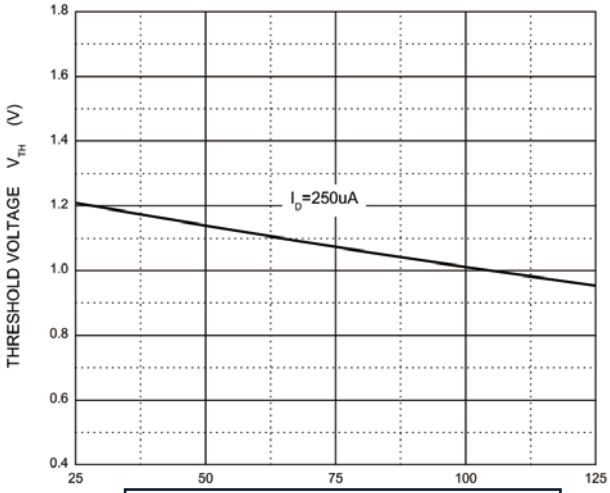
GATE TO SOURCE VOLTAGE VGS(V)

I_S — V_{SD}



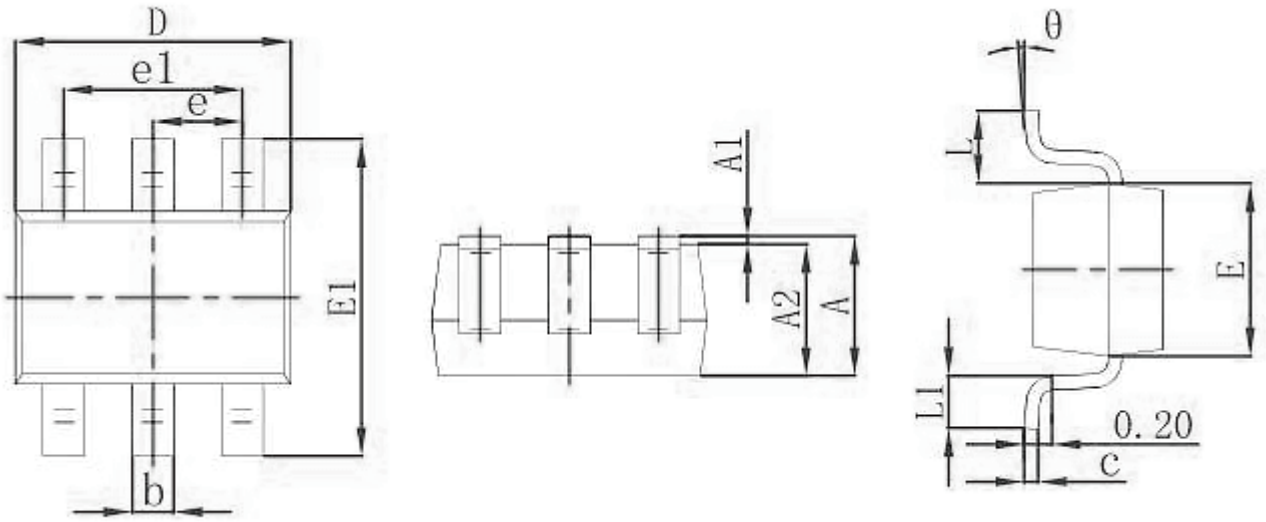
SOURCE TO DRAIN VOLTAGE VSD(V)

Threshold Voltage



JUNCTION TEMPERATURE TJ(℃)

SOT-363 Package Outline Dimensions



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°