Features

- Trench Power LV MOSFET technology
- AEC-Q101 Qualified
- ESD Protected up to 2KV (HBM)
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

DUAL N-CHANNEL MOSFET

Maximum Ratings

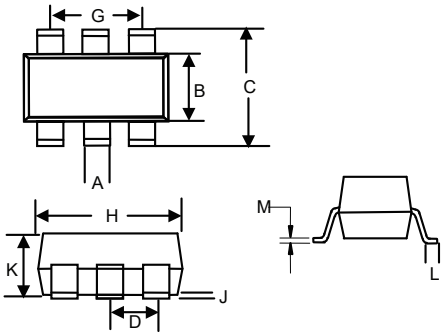
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance:515°C/W Junction to Ambient(Steady-State)(Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	220	mA
	T_A=100°C		140	
Pulsed Drain Current(Note3)		I_{DM}	0.88	A
Total Power Dissipation(Note4)		P_D	0.24	W

Note:

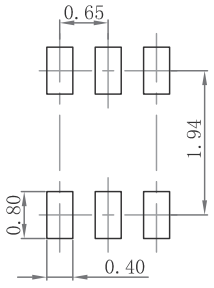
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction to Ambient thermal resistance.

SOT-363

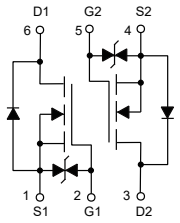


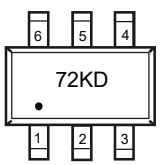
DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

SUGGESTED SOLDER PAD LAYOUT



Internal Structure and Marking Code





Dot denotes Pin1

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.8	1.5	2.4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=300mA		1.1	2.5	Ω
		V_{GS}=4.5V, I_D=200mA		1.3	3	
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=300mA		0.9	1.2	V
Reverse Recovery Time	t_{rr}	I_F=1A, dI_F/dt=100A/μs		15		ns
Reverse Recovery Charge	Q_{rr}			3.9		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		25		pF
Output Capacitance	C_{oss}			8		
Reverse Transfer Capacitance	C_{rss}			4		
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V,I_D=1A		1.75		nC
Gate-Source Charge	Q_{gs}			1		
Gate-Drain Charge	Q_{gd}			0.25		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V R_{GEN}=3Ω, I_{DS}=1A		4.6		ns
Turn-On Rise Time	t_r			20		
Turn-Off Delay Time	$t_{d(off)}$			10.5		
Turn-Off Fall Time	t_f			25.5		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

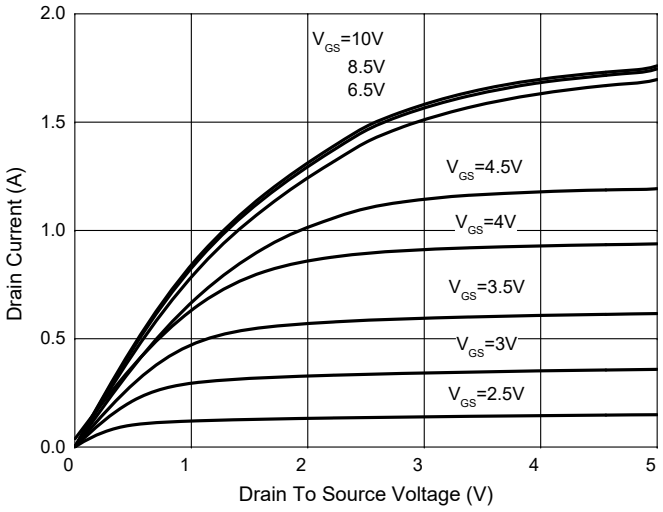


Fig. 2 - Transfer Characteristics

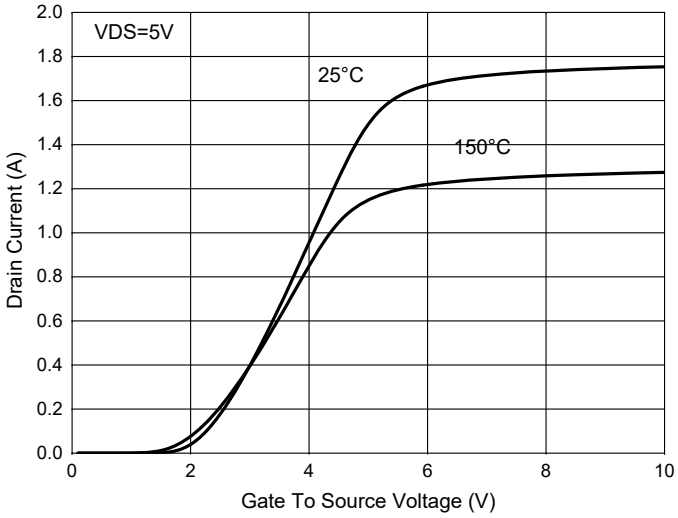


Fig. 3- Capacitance Characteristics

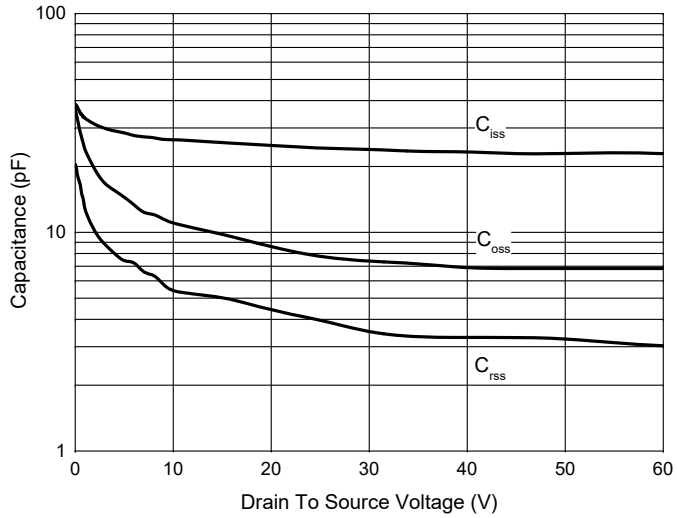


Fig. 4 - GateCharge

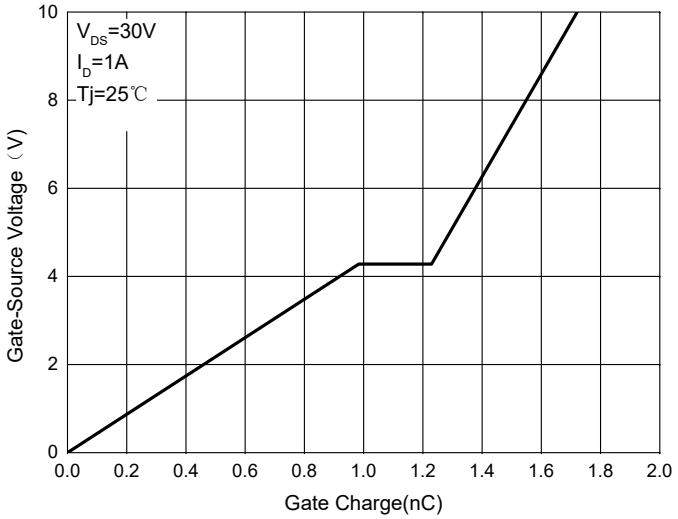


Fig. 5 - $R_{DS(ON)}$—V_{GS}

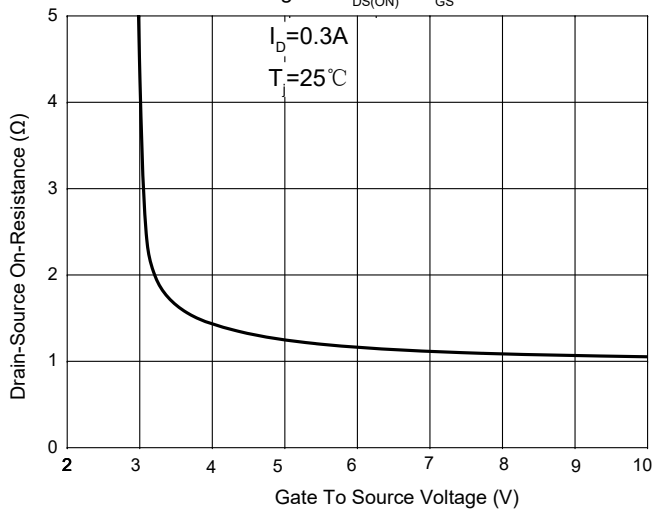
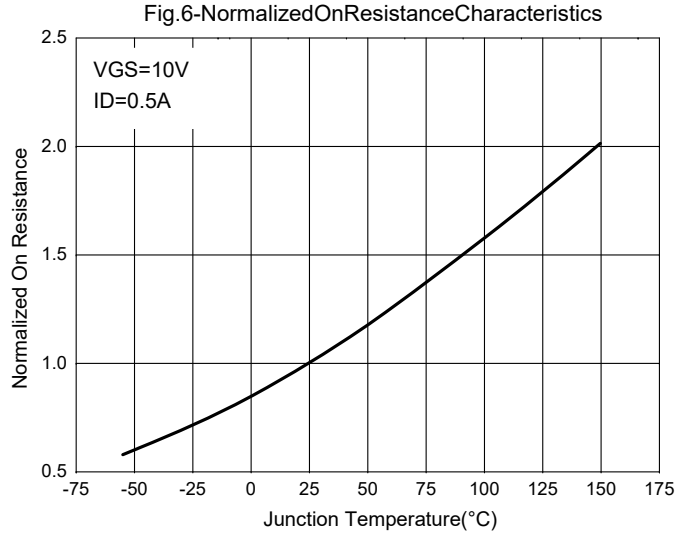


Fig.6-NormalizedOnResistanceCharacteristics



Curve Characteristics

Fig. 7 - $R_{DS(ON)}$—I_D

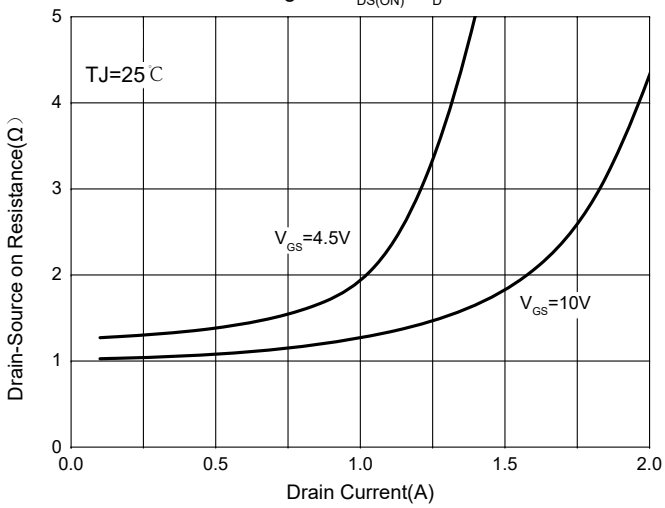


Fig. 8 - I_S—V_{SD}

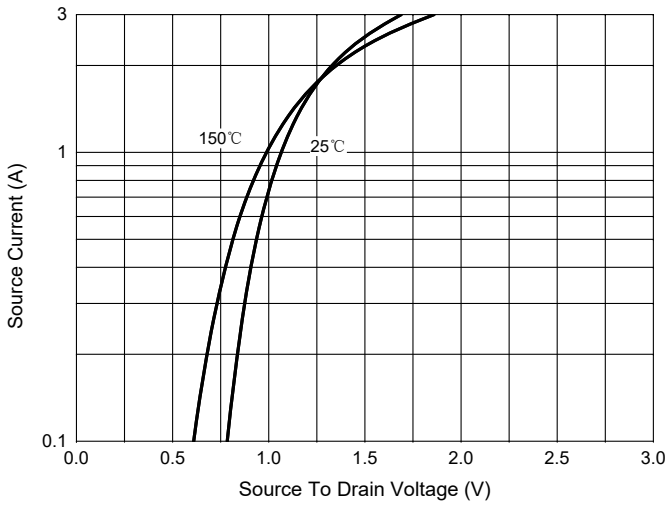


Fig. 9 - Nomalized Threshold voltage

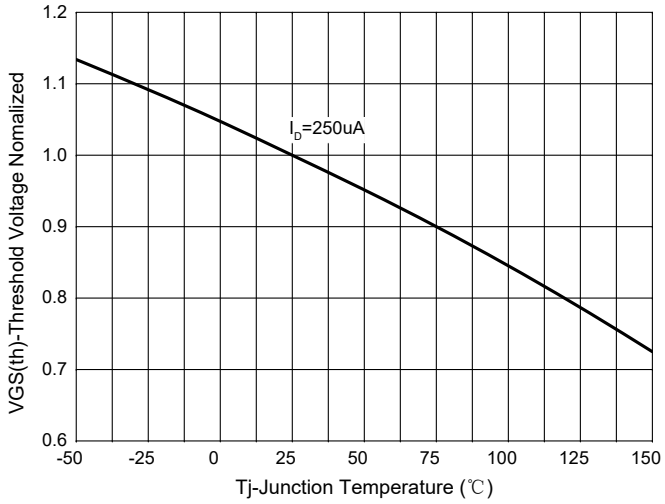


Fig. 10 - Current dissipation

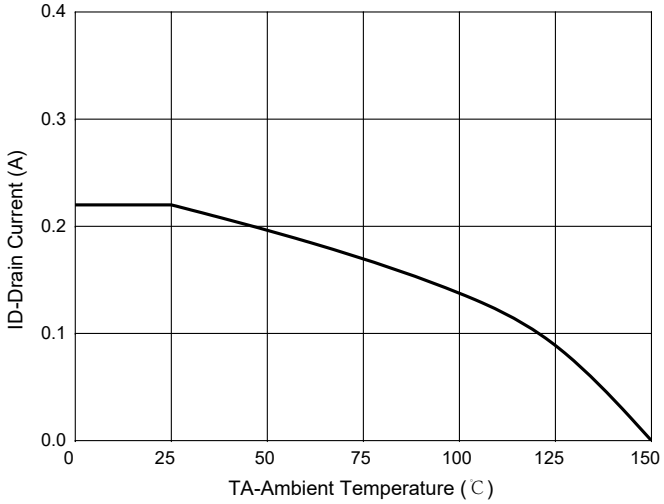
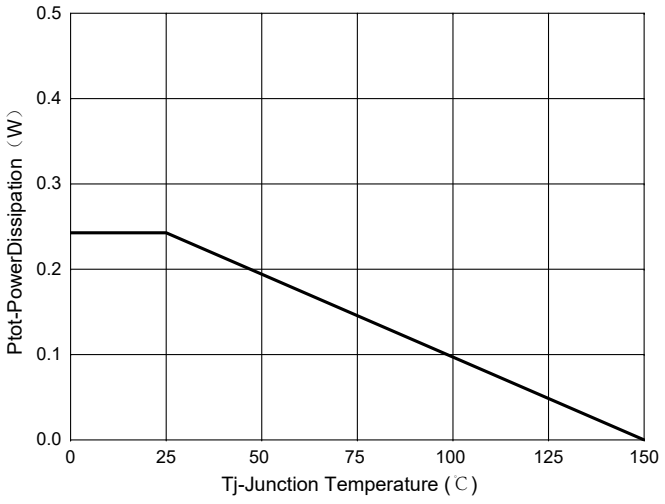


Fig.11-PowerDissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

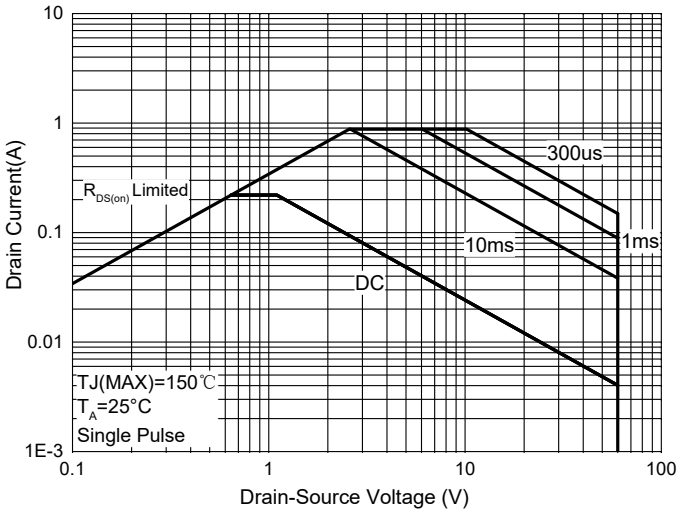
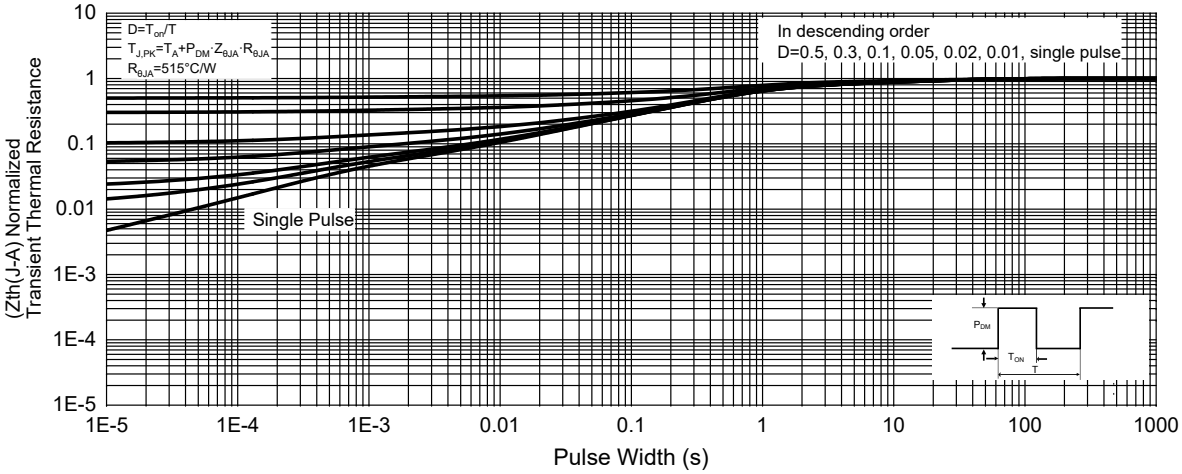


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
2N7002KDWBQ-TP	Tape&Reel: 3Kpcs/Reel

Revision History

Datasheet status	Version No	Release date	Update content
New product datasheet	Rev4-1	20221220	