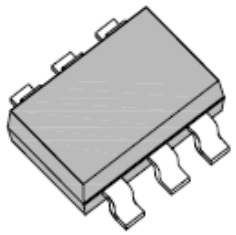
Enhancement Mode MOSFET (Double N-Channel)



SOT-363

HALOGEN FREE

RoHS Compliant

Features

- Advanced Trench Process Technology
- High density cell design for low $R_{DS(ON)}$
- Very low leakage current in off condition
- ESD Protected 2000V HBM
- RoHS Compliance

Mechanical Data

Case:	SOT-363, Plastic Package
Terminals:	Solderable per MIL-STD-750, Method 2026
Weight:	0.006 gram

Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description		2N7002KDWS	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Drain Current Continuous		115	mA
I_{DP}	Drain Current Pulsed		800	mA
P_D	Drain Power Dissipation	T_A=25°C	200	mW
		T_A=75°C	120	mW
T_J	Junction Temperature		+150	° C
T_{STG}	Storage Temperature Range		-55 to +150	° C
ESD	Gate-Source ESD Rating		2000	V

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

Off Characteristics

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60	-	-	V	V_{GS}=0V, I_D=10μA
I_{DSS}	Zero Gate Voltage Drain Current	-	-	1	uA	V_{DS}=60V, V_{GS}=0V
I_{GSS}	Gate-Source Leakage Current	-	-	±10	μA	V_{GS}=±20V, V_{DS}=0V

On Characteristics (Note3)

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
$V_{GS(th)}$	Gate Threshold Voltage	1.0	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
$R_{DS(ON)}$	Drain-Source ON Resistance	-	-	3.0	Ω	V_{GS}=10V, I_D=500mA
		-	-	4.0		V_{GS}=4.5V, I_D=200mA
g_{FS}	Forward Transconductance	100	-	-	mS	V_{DS}=15V, I_D=250mA

Dynamic Characteristics

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
C_{iss}	Input Capacitance	-	-	35	pF	V_{DS}=25V, V_{GS}=0V, f=1MHz
C_{rss}	Reverse Transfer Capacitance	-	-	5		
C_{oss}	Output Capacitance	-	-	10		

Switching Characteristics

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
t_{on}	Turn-On Time	-	-	20	nS	V_{DD}=30V, R_L=150Ω I_D=200mA, V_{GEN}=10V RG=10 Ω
t_{off}	Turn-Off Time	-	-	40		

Drain-Source Diode Ratings and Maximum Ratings

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
V_{SD}	Source-Drain Forward Voltage	-	820	1300	mV	V_{GS}=0V, I_S=200mA

Typical Characteristics Curves

Fig.1- Typical Output Characteristics

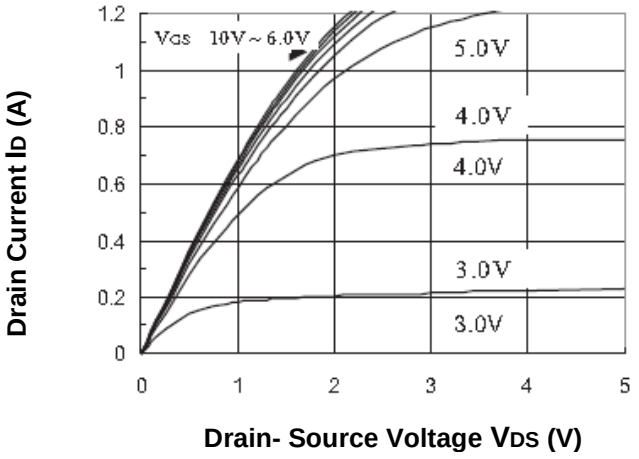


Fig.2- Transfer Characteristic

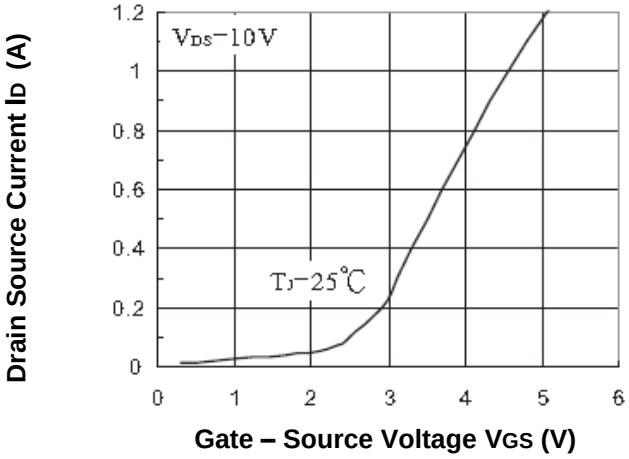


Fig.3- On-Resistance vs. Drain Current

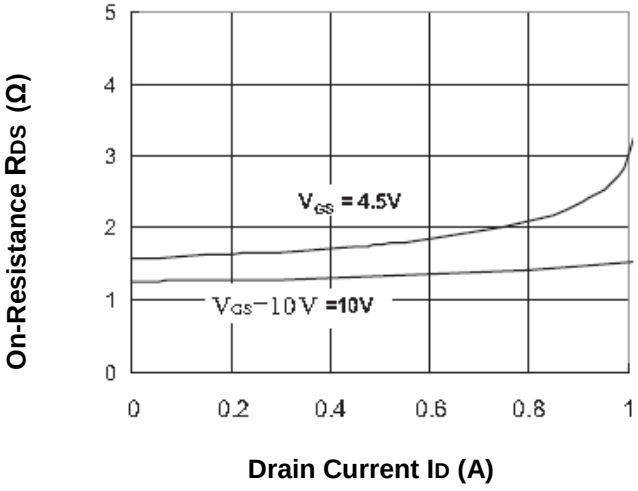


Fig.4- On-Resistance vs. Gate-Source Voltage

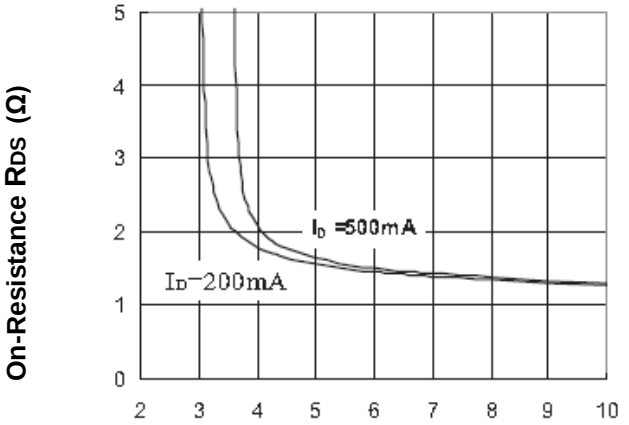


Fig.5- On-Resistance vs. Junction Temperature

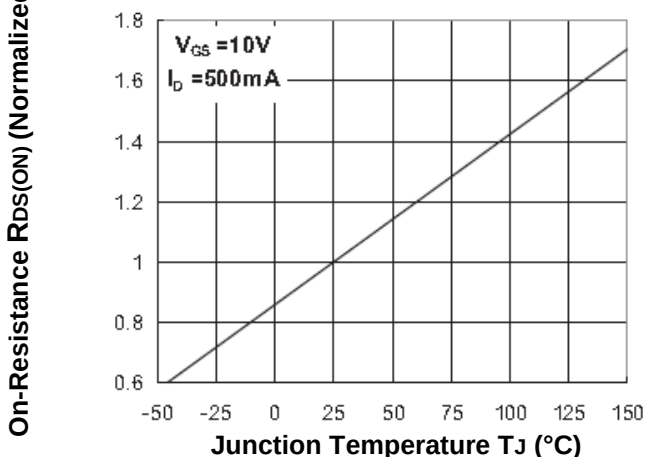


Fig.6- Gate Charge Characteristics

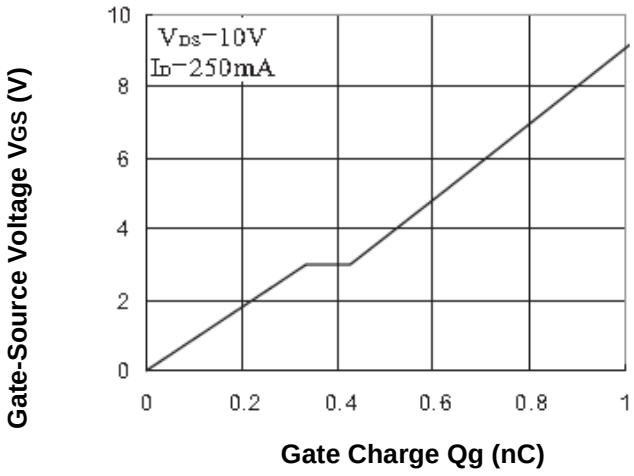


Fig.7- Threshold Voltage vs. Temperature

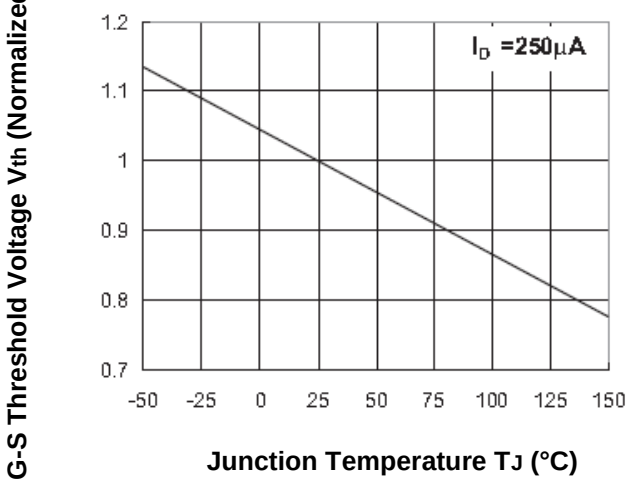


Fig.8- Breakdown Voltage vs. Junction Temperature

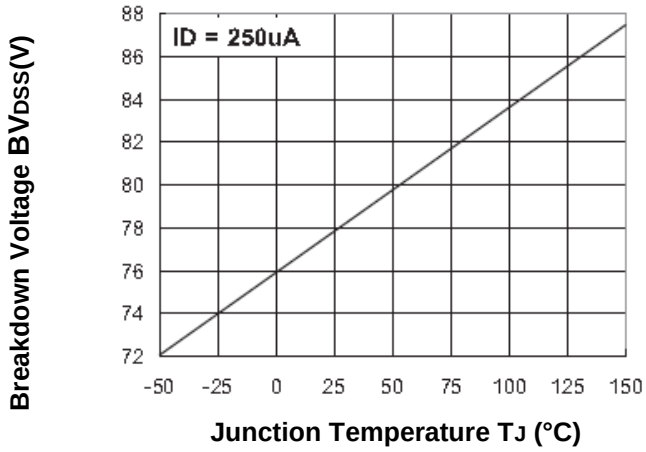
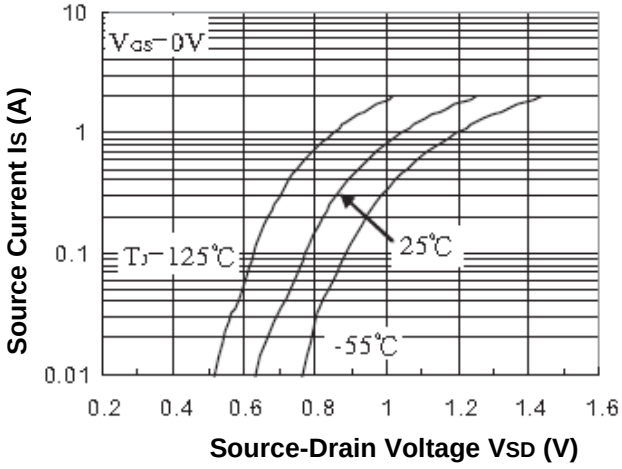
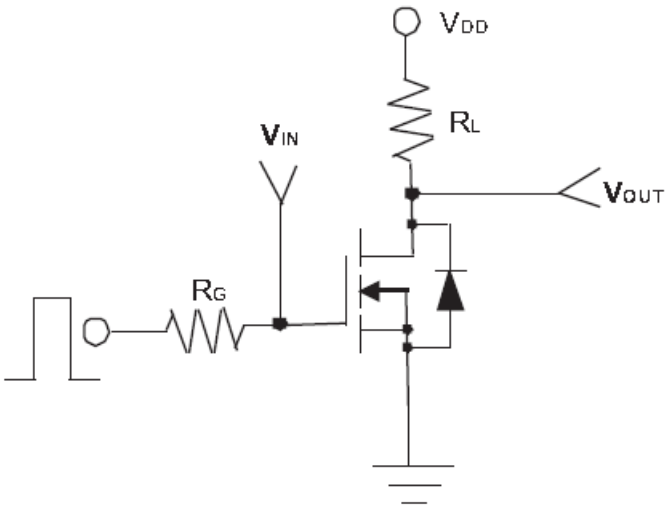


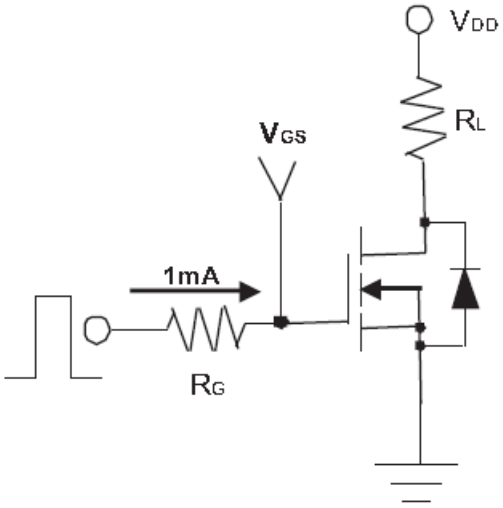
Fig.9- Source-Drain Diode Forward Voltage

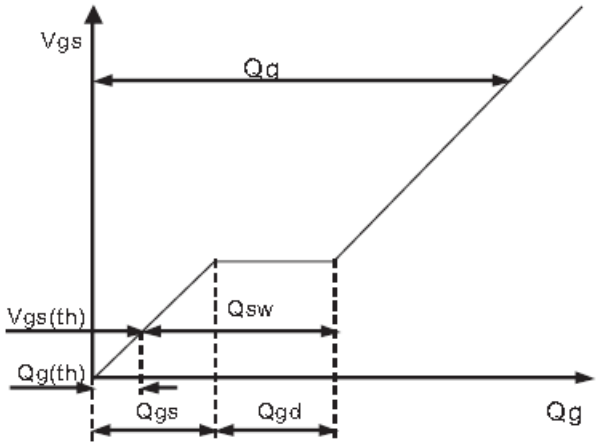


Switching Time Test Circuit

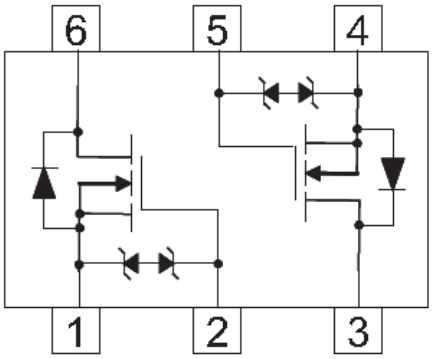


Gate Charge Test Circuit

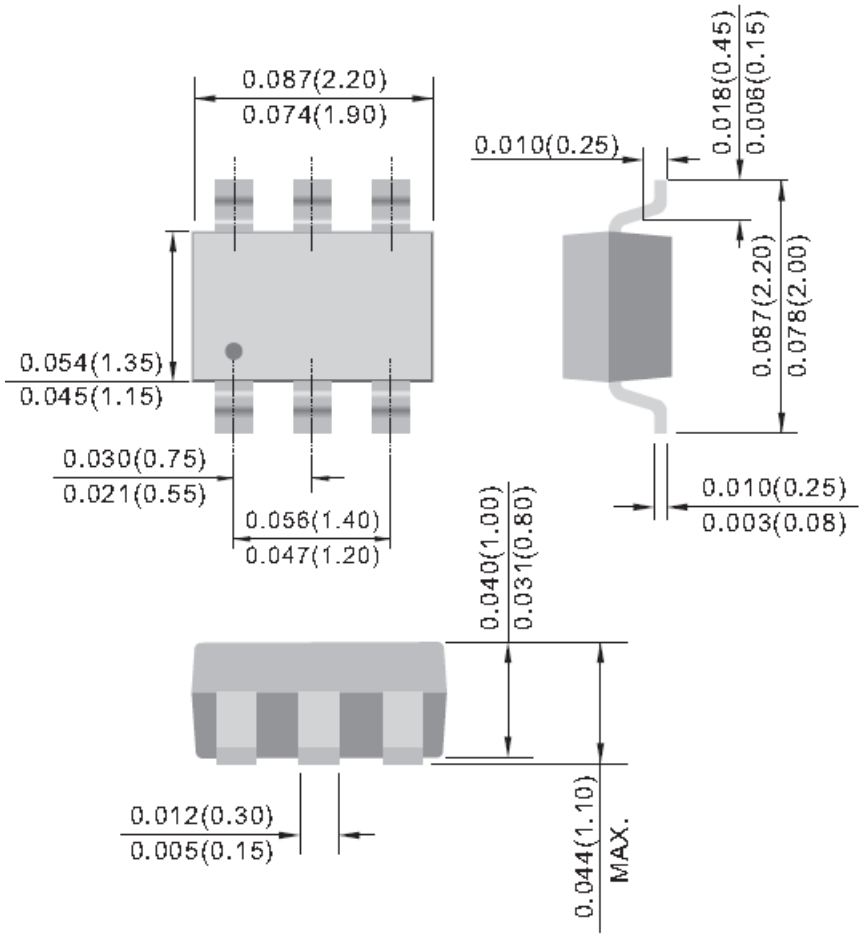




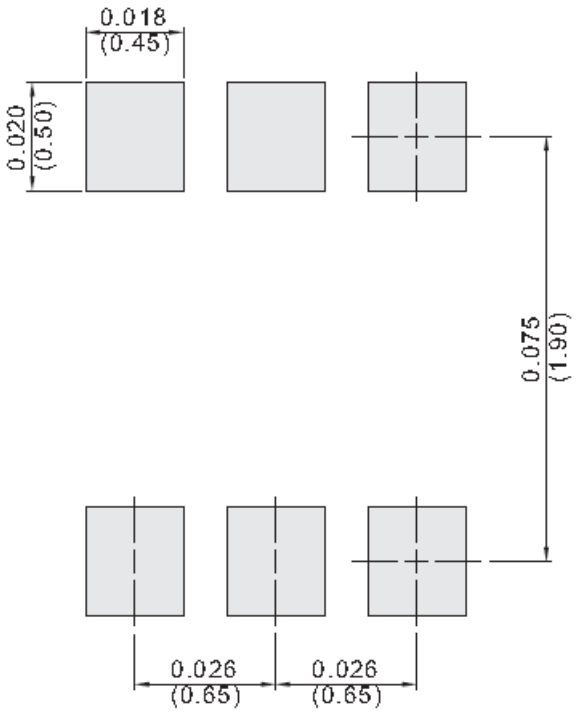
Equivalent Circuit



Dimensions in inch (mm)



Mounting Pad Layout in inch (mm)



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