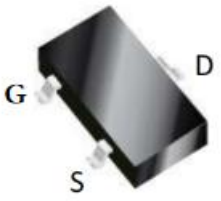
MU2N7002T

N-Channel Enhancement Mode MOSFET

Features

- 60V,0.3A
  $R_{DS(ON))}$(Typ.)=1.7Ω@V_{GS} = 10V
  $R_{DS(ON))}$(Typ.)=2.1Ω@V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- ESD Protected 2KV HBM.



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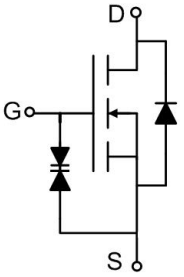

Application

- Battery Operated Systems
- Solid-State Relays
- Direct logic-level Interface TTL/CMOS

Absolute Maximum Ratings T_c = 25° C unless otherwise noted

Symbol	Parameter		Limit	Unit
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate-Source Voltage		± 20	
I_D	Drain Current-Continuous	T_A =25°C	0.3	A
		T_A =100°C	0.2	
I_{DM}	Drain Current-Pulsed [a]		1.2	A
P_D	Maximum Power Dissipation @ T_A =25°C		350	mW
T_{STG}	Store Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient Max	357	°C/W

Electrical Characteristics T_J = 25° C unless otherwise noted

Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±10	μA

On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D =250μA	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance [b]	V_{GS} =10V, I_D =0.3A	-	1.7	2.2	Ω
		V_{GS} =4.5V,I_D =0.2A	-	2.1	2.9	

Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Ciss	Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	28	-	pF
Coss	Output Capacitance		-	11	-	
Crss	Reverse Transfer Capacitance		-	4	-	
Qg	Total Gate Charge	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 0.3A	-	1.7	-	nC
Qgs	Gate-Source Charge		-	0.3	-	
Qgd	Gate-Drain Charge		-	0.6	-	

On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=10V,V_{GS} =10V I_D=0.2A,R_G=10Ω	-	2	-	ns
t_r	Turn-On Rise Time		-	15	-	
$t_{d(off)}$	Turn-Off Delay Time		-	7	-	
t_f	Turn-Off Fall Time		-	20	-	

Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current		-	-	0.3	A
I_{SM}	Maximum Pulsed Diode Forward Current		-	-	1.2	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_{SD} = 0.3A	-	-	1.2	V

Notes:

a：Max. current is limited by junction temperature.

b：Pulse test (pulse width≤300us, duty cycle≤2%).

Typical Characteristics

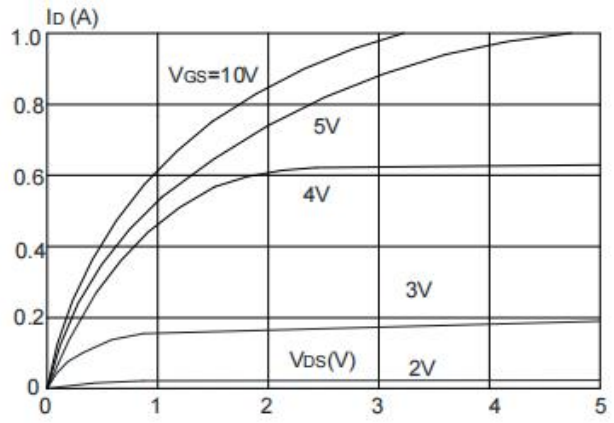

Figure 1. Typical Output Characteristics

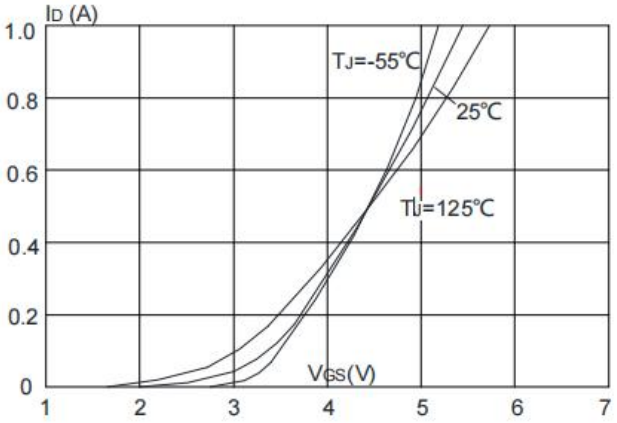

Figure 2. Typical Transfer Characteristics

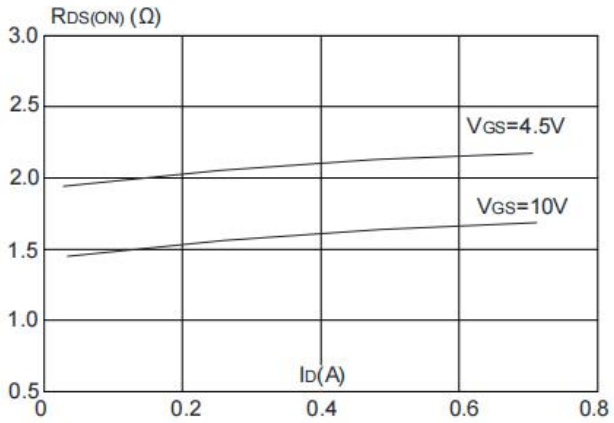

Figure 3. On- Resistance vs. Drain Current

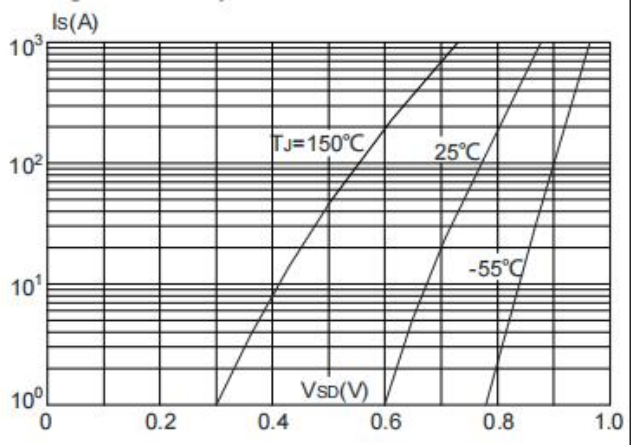

Figure 4.Body-Diode Characteristics

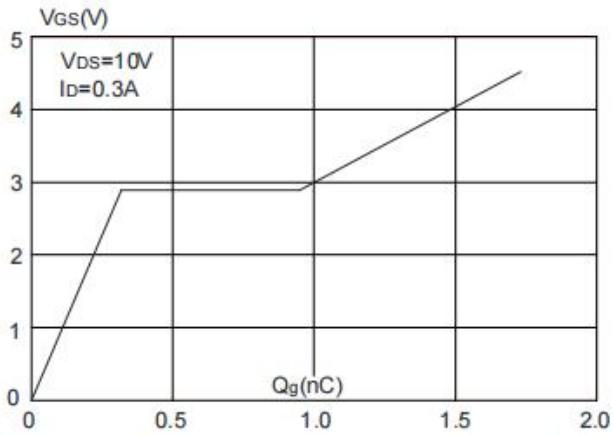

Figure 5. Gate-Charge Characteristics

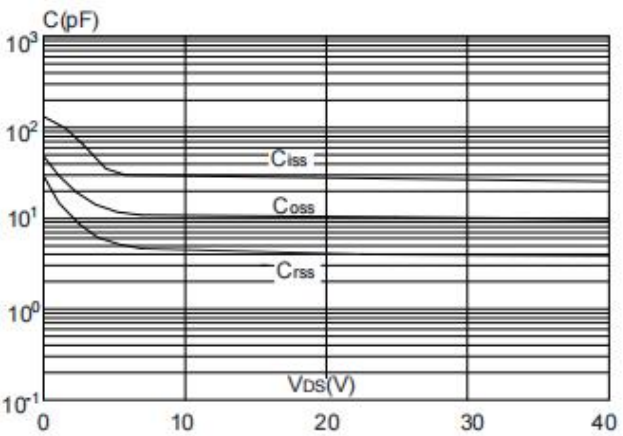

Figure 6.Capacitance Characteristics

Typical Characteristics

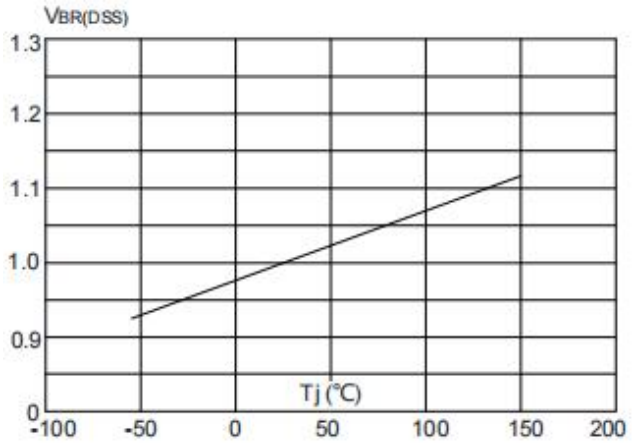

Figure 7.Normalized Breakdown voltage vs. Junction Temperature

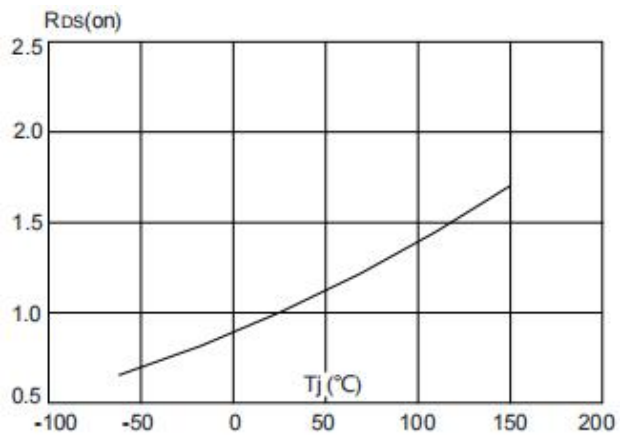

Figure 8. Normalized on Resistance vs. Junction Temperature

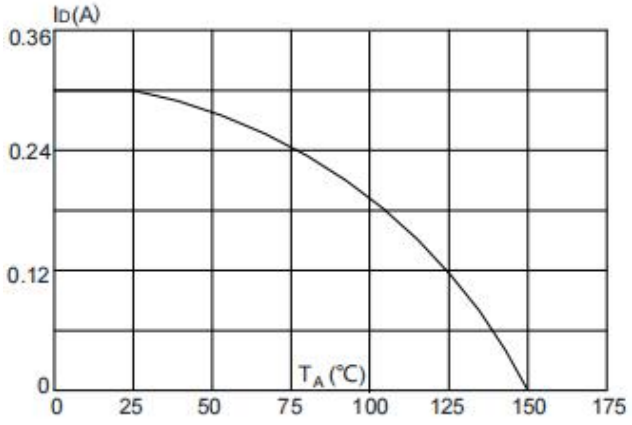

Figure 9. Maximum Continuous Drain Current vs. Case Temperature

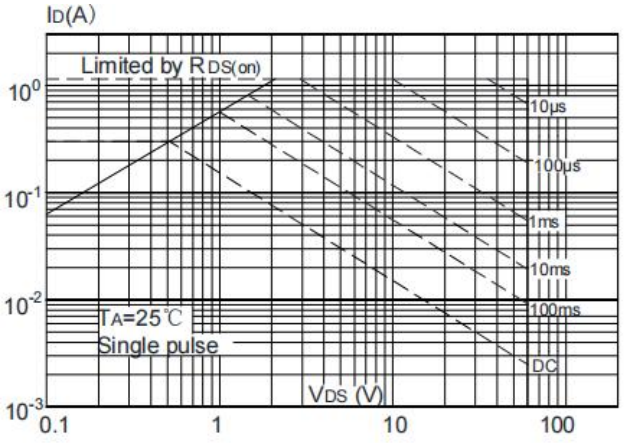

Figure 10. Maximum Safe Operating Area

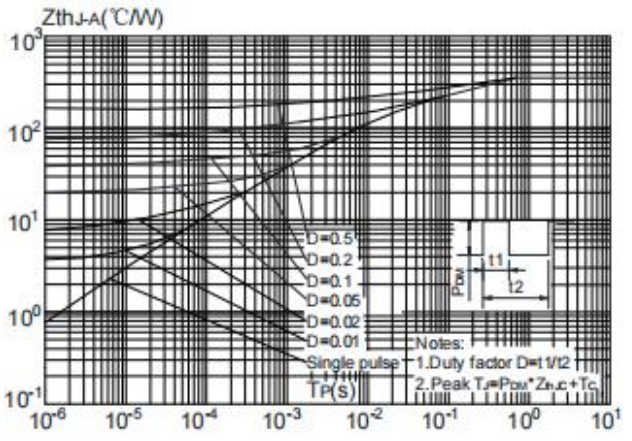

Figure 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Marking Information

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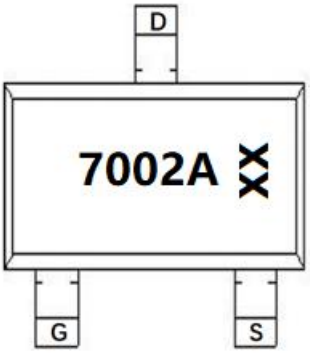

NOTE:

7002-Part number code

A-Version number code

XX-Week code