

N-Channel 60V(D-S) MOSFET

Product summary		
V_{DS}	60	V
$R_{DS(ON)}$ (at $V_{GS}=10V$) Max.	2.0	Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Max.	2.8	Ω
I_D ($T_A=25^{\circ}C$)	0.2	A

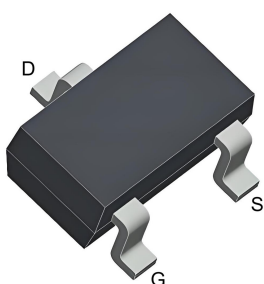
Features

- Low input Capacitance
- Trench Power MV MOSFET technology
- ESD Protection

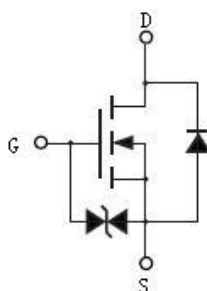
Applications

- Small signal application
- Load switch

Pin Configuration



SOT-323



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
2N7002KW	SOT-323	7"	3000pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current ^A	$T_A=25^{\circ}C$	0.20	A
		$T_A=70^{\circ}C$	0.16	A
I_{DM}	Pulse Drain Current Tested ^B		0.8	A
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.3	W
T_J, T_{STG}	Junction and Storage Temperature Range		-55 to +150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^A	417	$^{\circ}C/W$

Electrical Characteristics (at T_J =25°C Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V	--	--	1	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	--	--	±10	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	1.6	2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance ^C	V _{GS} =10V, I _D =0.2A	--	--	2.0	Ω
		V _{GS} =4.5V, I _D =0.1A	--	--	2.5	Ω
V _{SD}	Diode Forward Voltage	I _{SD} =0.2A, V _{GS} =0V	--	--	1.2	V
Dynamic Parameters ^D						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V f=1MHZ	--	28	--	pF
C _{oss}	Output Capacitance		--	11	--	pF
C _{rss}	Reverse Transfer Capacitance		--	4	--	pF
Q _g	Total Gate Charge	V _{DS} =10V, I _D =0.2A V _{GS} =0 to 4.5V	--	2	--	nC
Q _{gs}	Gate-Source Charge		--	0.3	--	nC
Q _{gd}	Gate-Drain Charge		--	0.6	--	nC
t _{D(on)}	Turn-on Delay Time	V _{DD} =10V I _D =0.2A, R _{GEN} =10Ω , V _{GS} =10V	--	2	--	ns
t _r	Turn-on Rise Time		--	15	--	ns
t _{D(off)}	Turn-off Delay Time		--	7	--	ns
t _f	Turn-off Fall Time		--	20	--	ns

A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 20Z copper.

B. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

C. Pulse Test: Pulse Width≤300us, Duty cycle≤0.5%.

D. Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

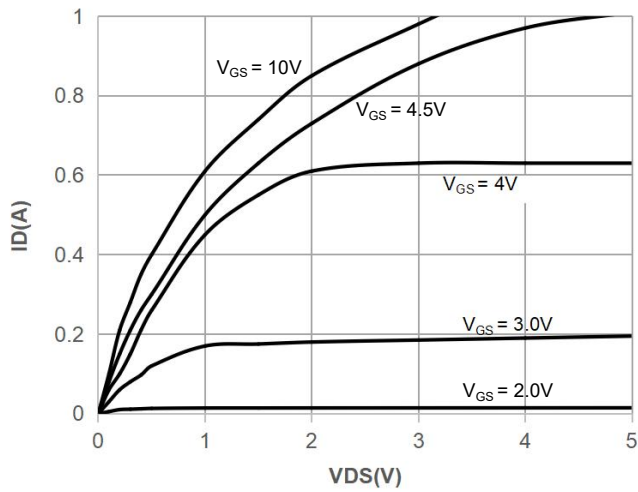


Figure 2: Typical Transfer Characteristics

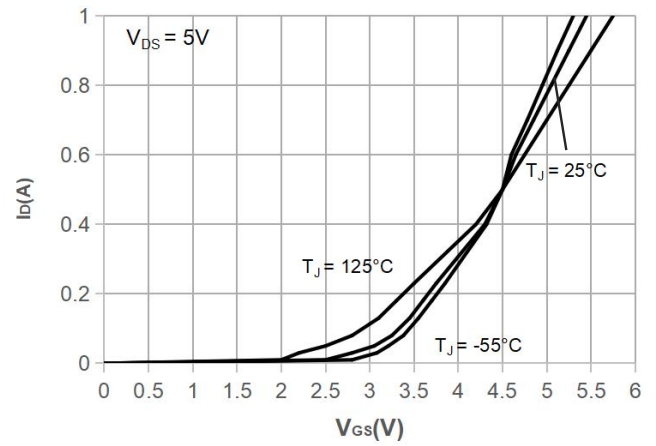


Figure 3: On-resistance vs. Drain Current

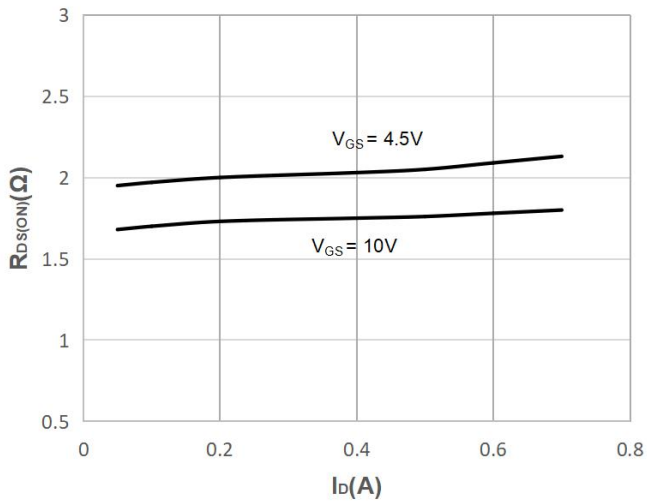


Figure 4: Body Diode Characteristics

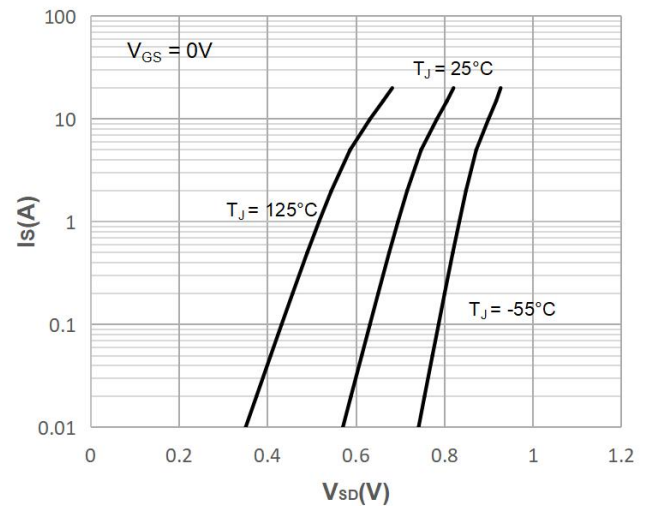


Figure 5: Gate Charge Characteristics

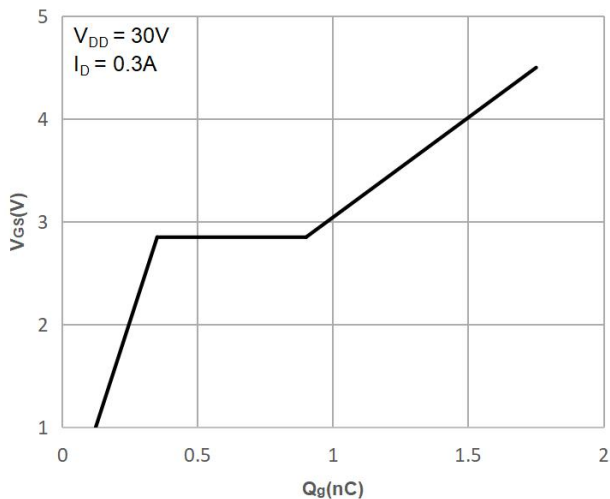
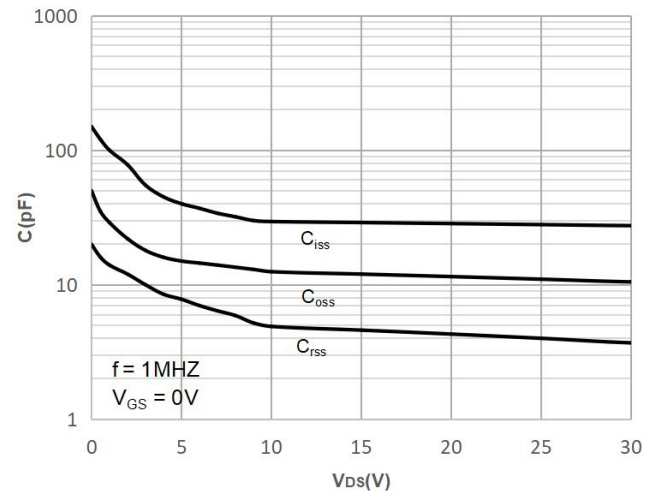


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

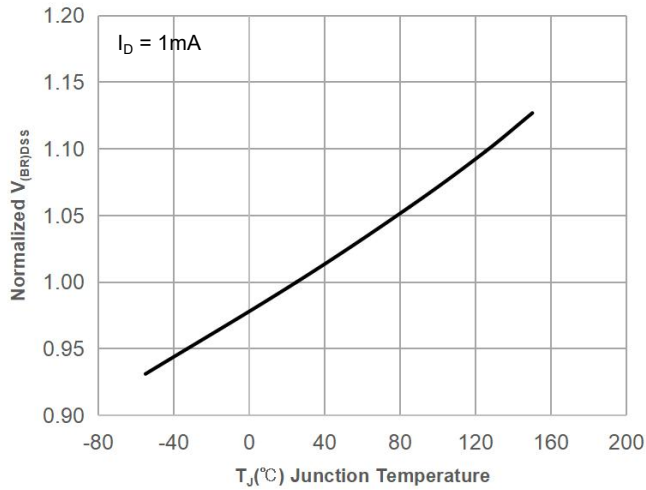


Figure 8: Normalized on Resistance vs. Junction Temperature

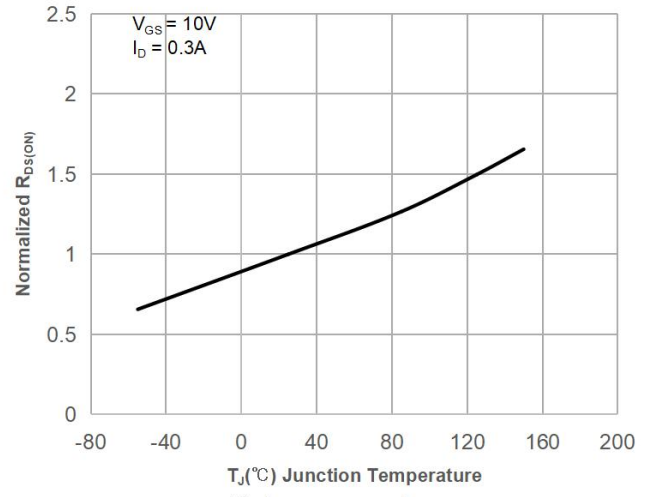


Figure 9: Maximum Safe Operating Area

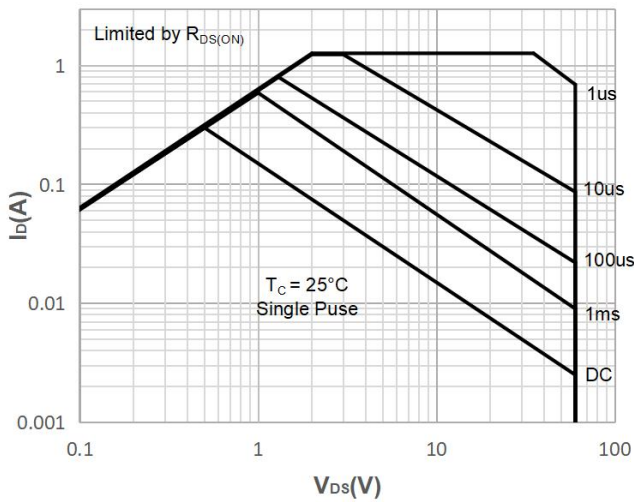


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

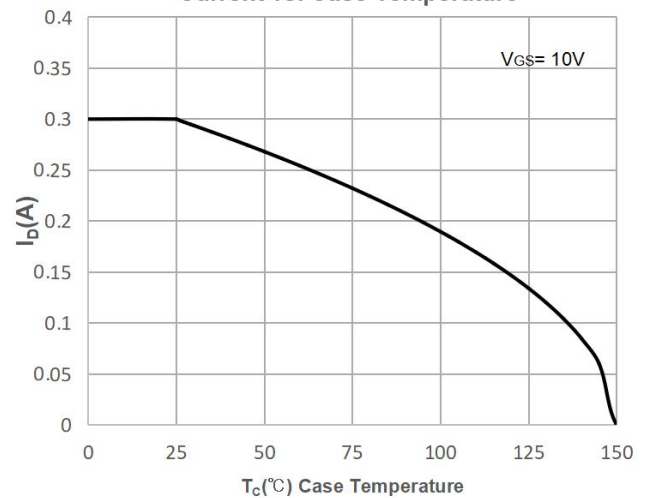


Figure 11: Normalized Maximum Transient Thermal Impedance

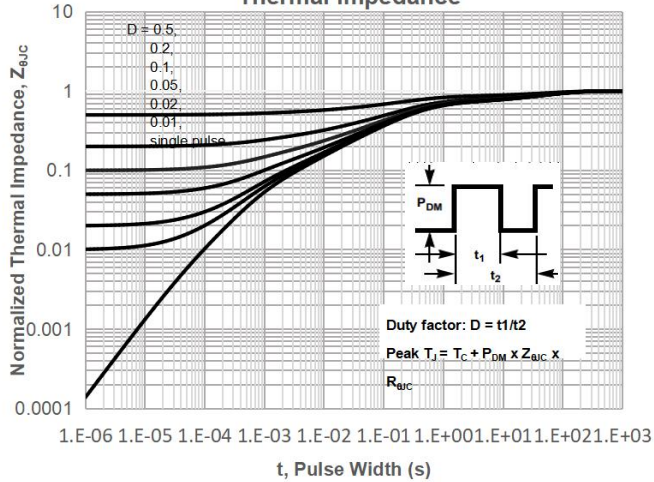
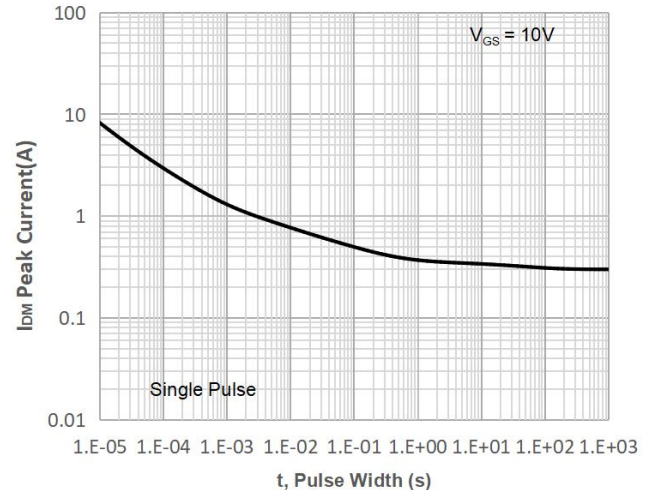
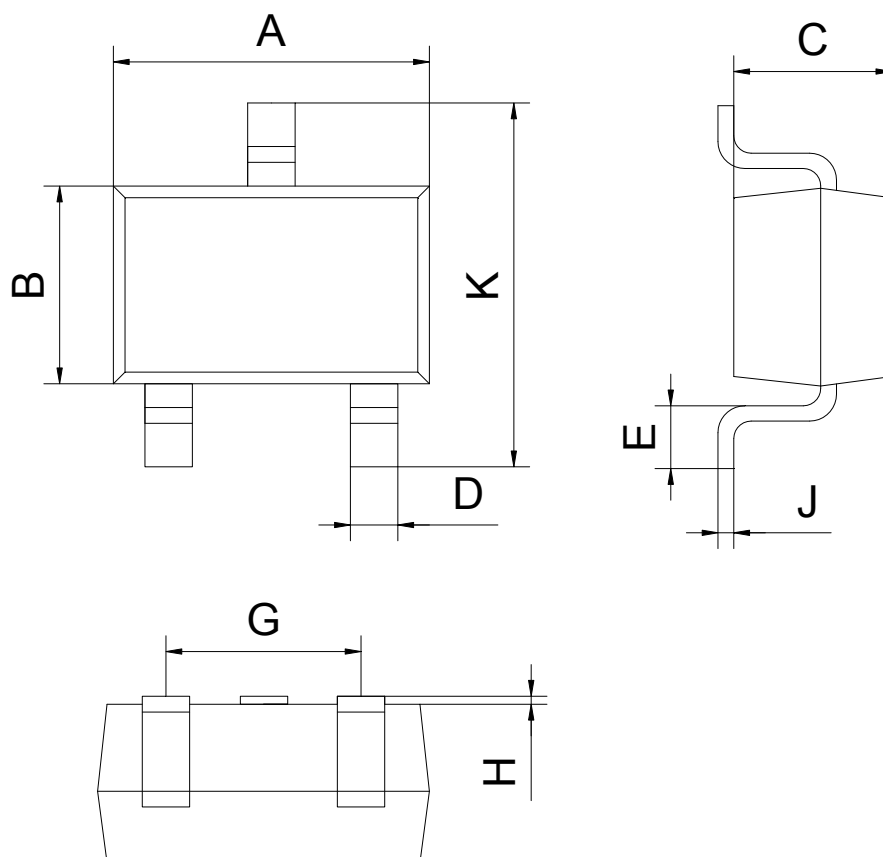


Figure 12: Peak Current Capacity



SOT-323 Package Information



SOT-323		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40
All Dimensions in mm		