

2N7002DW

N-Channel MOSFET

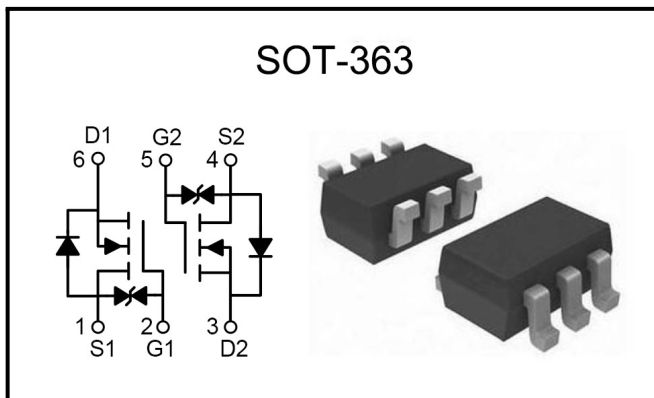
Features

- $V_{DS}=60V$
- $I_D=0.3A$
- $R_{DS(ON)} @V_{GS}=10V, MAX=2.2\Omega$
- $R_{DS(ON)} @V_{GS}=4.5V, MAX=3.3\Omega$

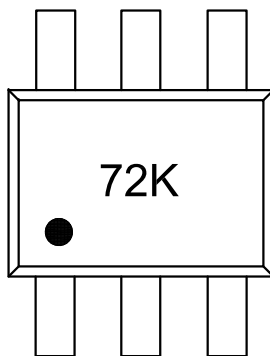
Description

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- High saturation current capability
- SOT-363 for Surface Mount Package
- ESD protected for 2KV(HBM)

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
2N7002DW	SOT-363	72K	3K	Tape and reel

Absolute Maximum Ratings (@ $T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current	0.3	A
P_D	Maximum Power Dissipation	350	mW
T_J	Operating Junction Range	-55 to + 150	$^{\circ}C$
T_{stg}	Storage Temperature Range	-55 to + 150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	357	$^{\circ}C/W$

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Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	60	—	—	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	1	—	2.5	V
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} = 60V, V _{GS} = 0V	—	—	1.0	uA
I _{GSS}	Gate Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±10	uA
		V _{GS} = ±10V, V _{DS} = 0V	—	—	±200	nA
V _{SD}	Diode Forward Voltage	I _S = 0.25A, V _{GS} = 0V	—	—	1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 0.3A	—	—	2.2	Ω
		V _{GS} = 4.5V, I _D = 0.2A	—	—	3.3	
Dynamic						
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	28	—	pF
C _{oss}	Output Capacitance		—	11	—	
C _{rss}	Reverse Transfer Capacitance		—	4	—	
Switching						
t _{d(on)}	Turn-on Delay Time	V _{DD} = 10V, I _D = 0.2A, R _{GEN} = 10Ω, V _{GS} = 10V	—	2	—	nS
t _r	Rise time		—	15	—	
t _{d(off)}	Turn-off Delay Time		—	7	—	
t _f	Turn-off Fall Time		—	20	—	



Typical Characteristics

Figure 1 : Output Characteristic

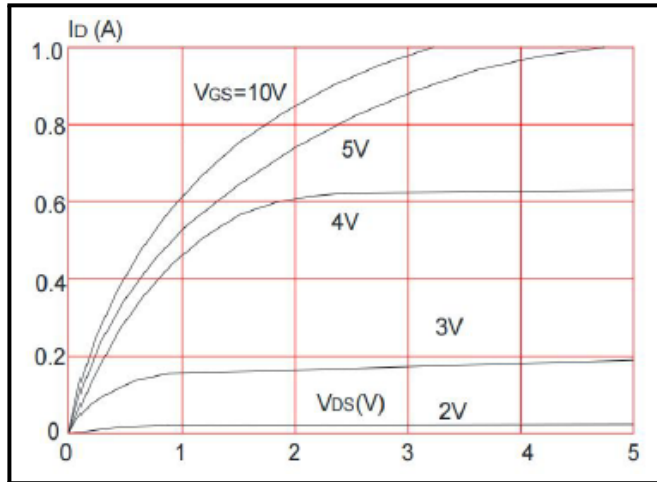


Figure 2 : Typical Transfer Characteristic

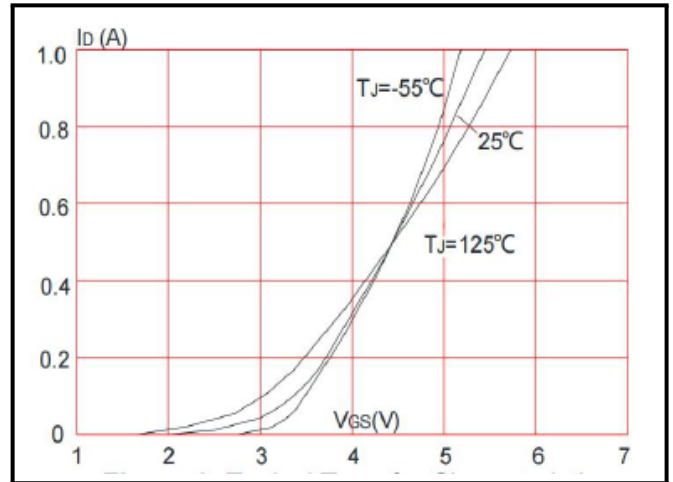


Figure 3 : On-resistance vs Drain Current

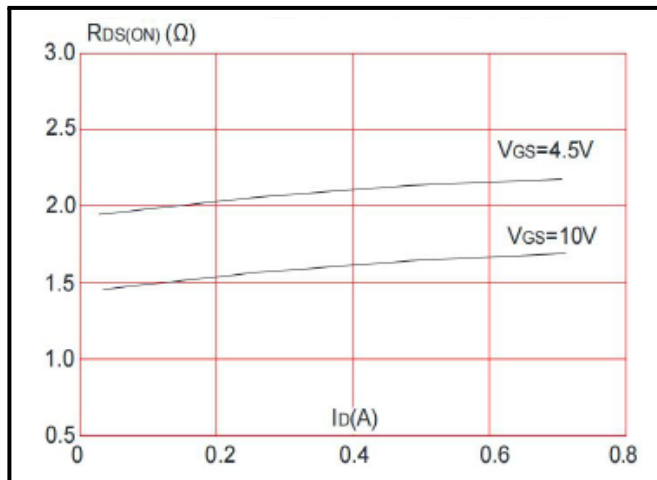


Figure 4 : Body Diode Characteristic

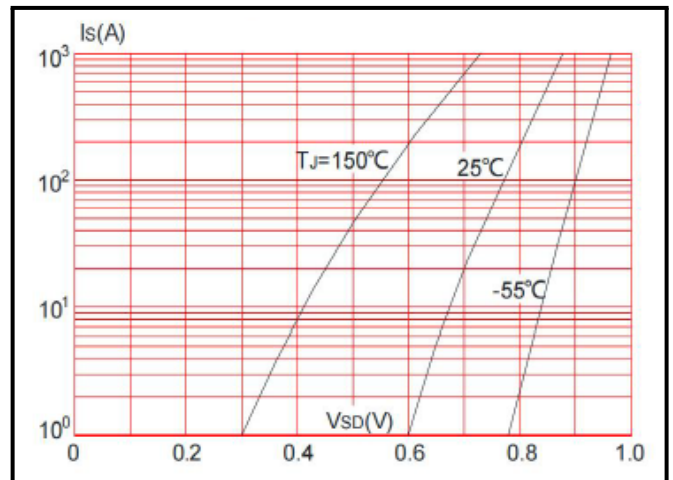


Figure 5 : Gate Charge Characteristic

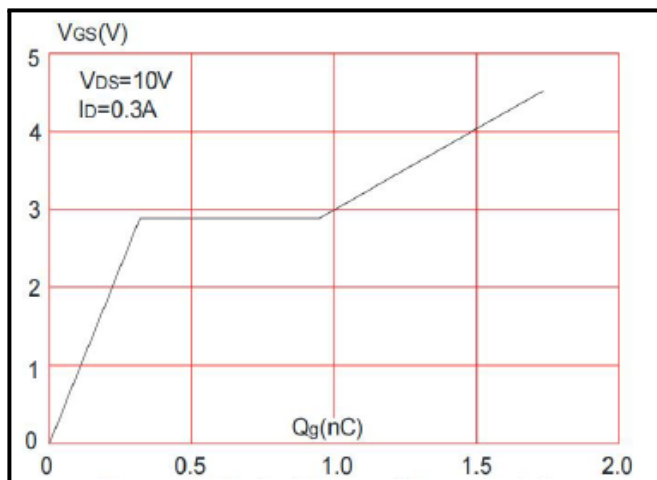
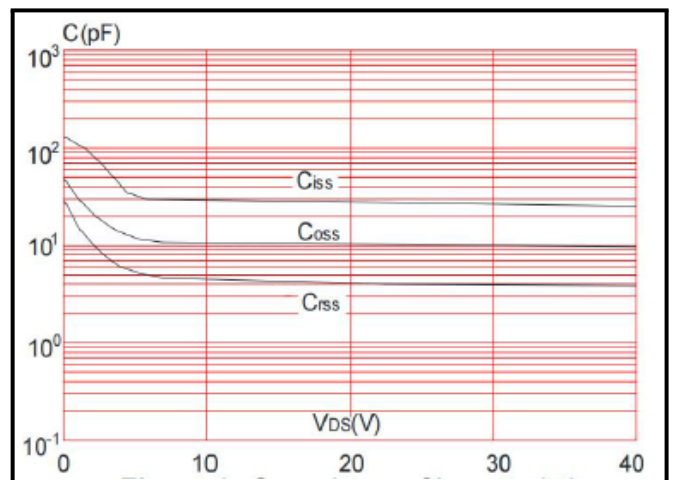


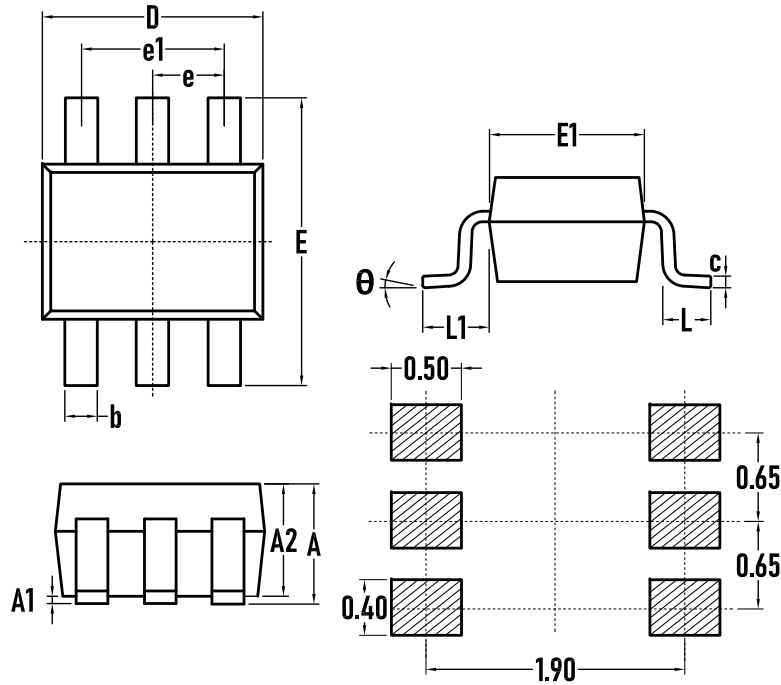
Figure 6 : Capacitance Characteristic



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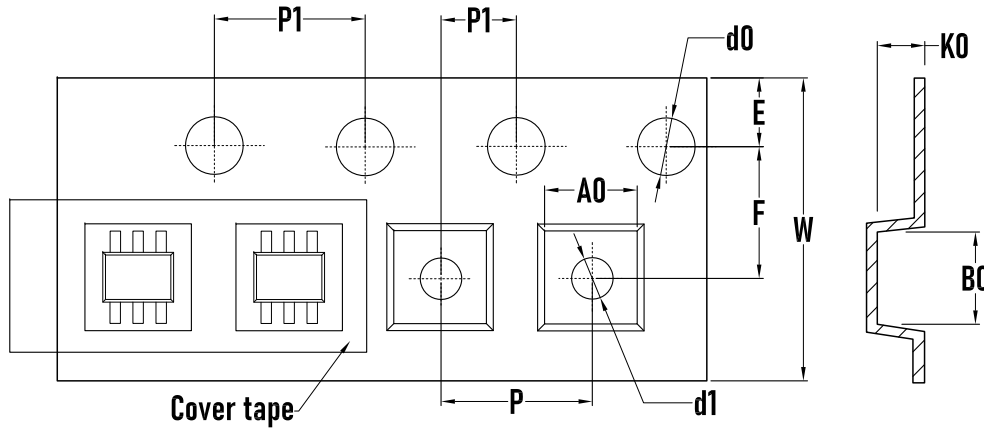
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Outline Drawing - SOT-363



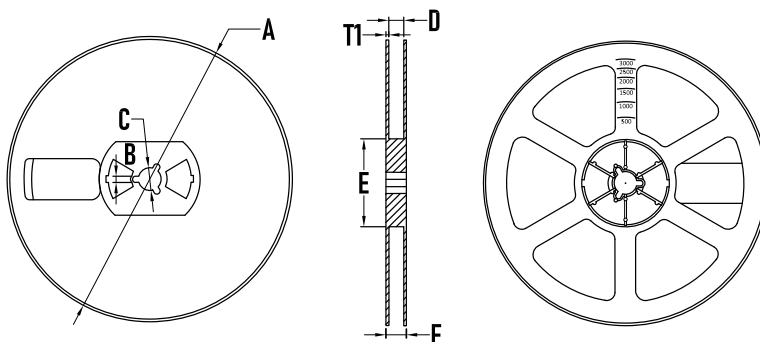
SYMBOL	MILLIMETER		
	MIN.	TYP.	MAX.
A	0.90	1.00	1.10
A1	0.00	0.50	0.100
A2	0.90	0.95	1.00
b	0.15	0.25	0.35
C	0.08	0.12	0.15
D	2.00	2.10	2.20
E	2.15	2.30	2.45
E1	1.15	1.25	1.35
e	0.65(TYP)		
e1	1.20	1.30	1.40
L	0.26	0.36	0.46
L1	0.525(REF)		
θ	0°	4°	8°

Packaging Tape - SOT-363



SYMBOL	MILLIMETER
A0	2.25±0.1
B0	2.55±0.1
E	1.75±0.1
F	3.50±0.1
K0	1.20±0.1
P	4.00±0.1
P0	4.00±0.1
P1	2.00±0.1
W	8.00±0.2

Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	2.7±0.2
C	13.5±0.2
D	9.6±0.3
E	54.5±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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