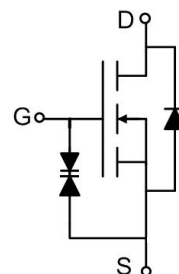


Features

- ◆ 60V, 0.32A, $R_{DS(ON)}$ (Typ.) = 1.7Ω @ $V_{GS} = 10V$.
- ◆ Very Low Leakage Current In Off Condition.
- ◆ ESD Protected 2KV HBM.



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Application

- ◆ Power switching application
- ◆ Hard switched and high frequency circuits
- ◆ Direct logic-level Interface TTL/CMOS

Absolute Maximum Ratings $T_c = 25^\circ\text{C}$ 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, $T_A = 25^\circ\text{C}$	320	mA
I_{DM}	Drain Current-Pulsed ^a	1200	
P_D	Maximum Power Dissipation @ $T_A = 25^\circ\text{C}$	350	mW
T_{STG}	Store Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

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

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

Off Characteristics

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

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.1	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^b	$V_{GS} = 10V, I_D = 300mA$	-	1.7	2.2	Ω
		$V_{GS} = 4.5V, I_D = 200mA$	-	2.1	3.0	
gfs	Forward Transconductance	$V_{DS} = 15V, I_D = 250mA$	300	-	-	mS

■ 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	$V_{DS} = 10V,$ $V_{GS} = 4.5V,$ $I_D = 300mA$	-	1.7	-	nC
Qgs	Gate-Source Charge		-	0.3	-	nC
Qgd	Gate-Drain("Miller") Charge		-	0.6	-	nC

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 10V, I_D = 200mA$ $R_G = 10\Omega, V_{GS} = 10V$	-	2	-	ns
t_r	Turn-On Rise Time		-	5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	7	-	ns
t_f	Turn-Off Fall Time		-	20	-	ns

■ Drain-Source Diode Characteristics

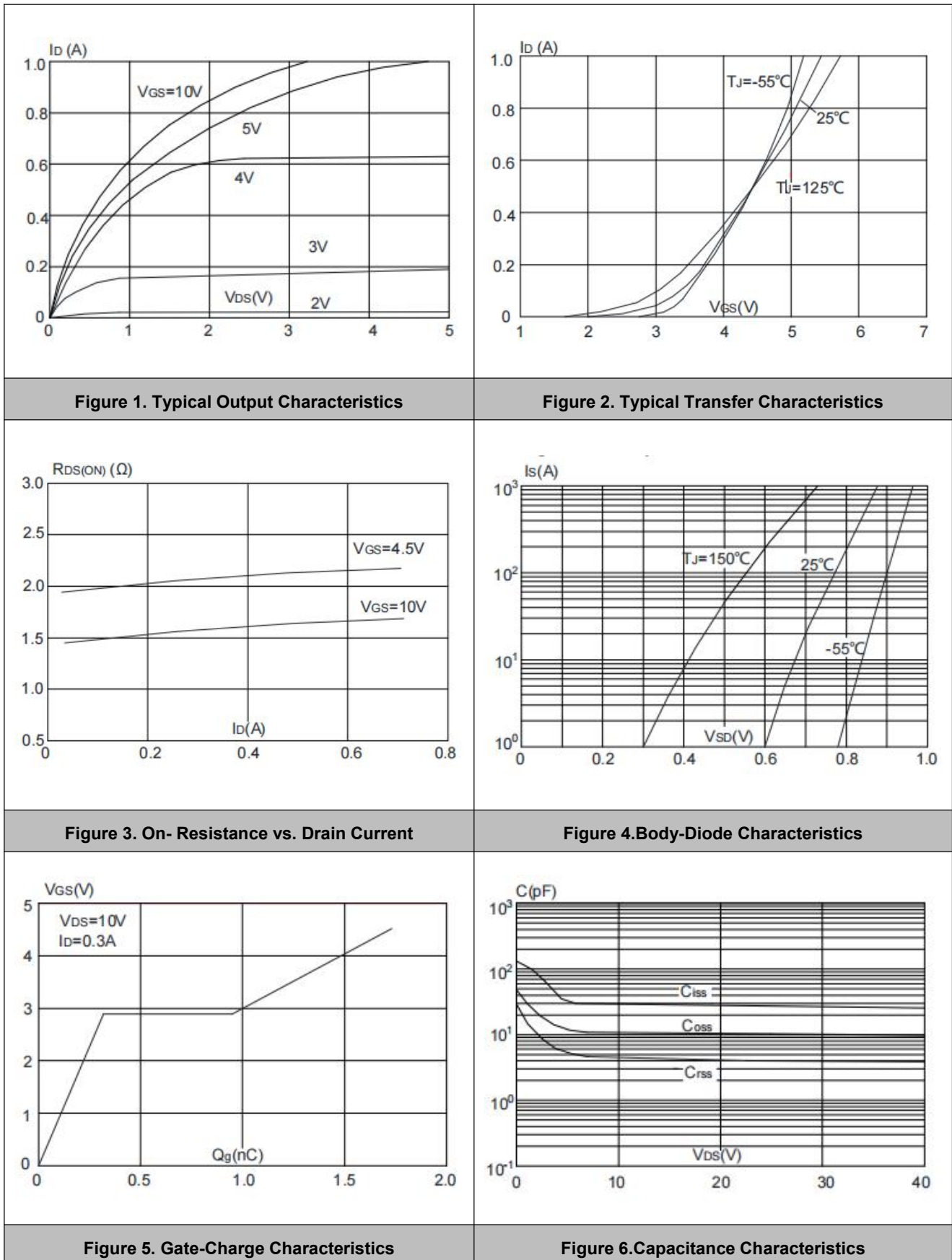
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.3	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	1.2	A
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 0.3A$	-	-	1.2	V

Notes:

a: Max. current is limited by junction temperature.

b: Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

Typical Characteristics



Typical Characteristics

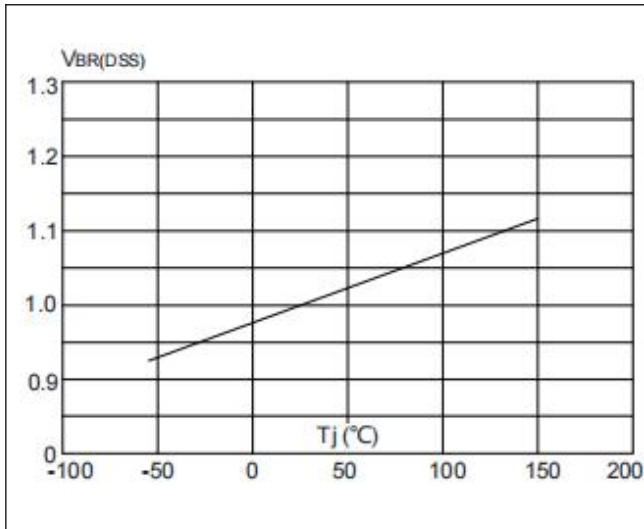


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

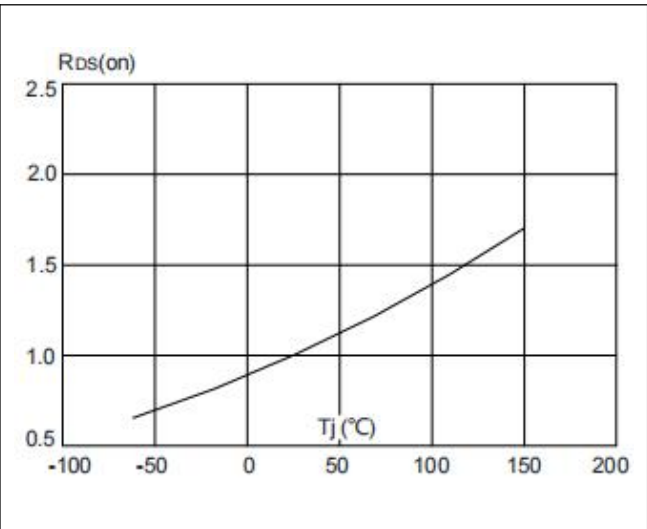


Figure 8. Normalized on Resistance vs. Junction Temperature

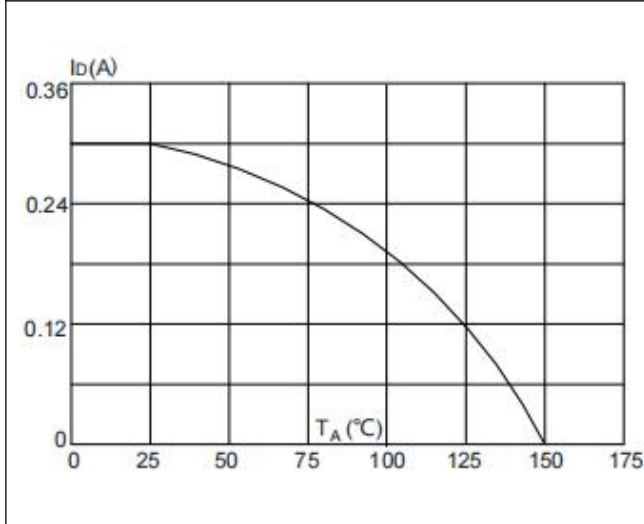


Figure 9: Maximum Continuous Drain Current vs. Case Temperature

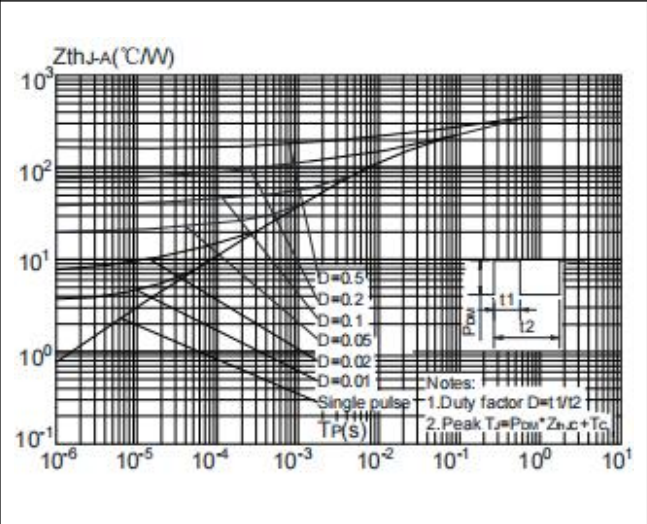


Figure 10: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

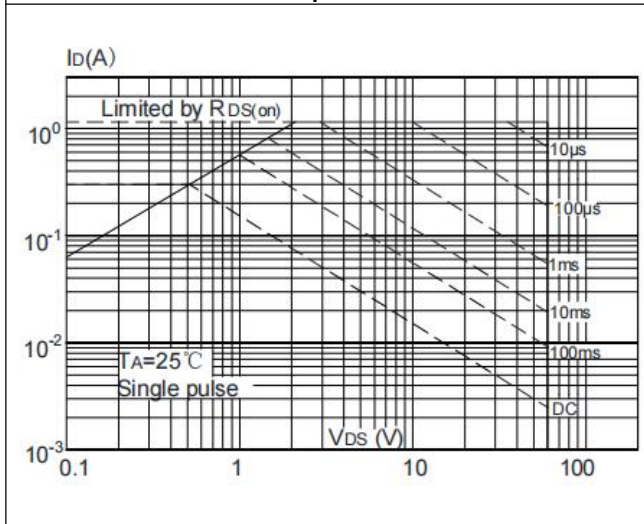
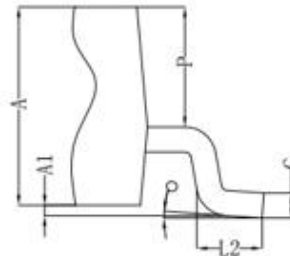
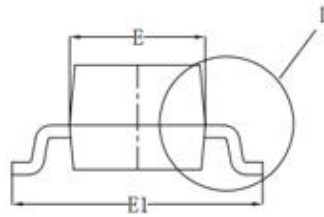
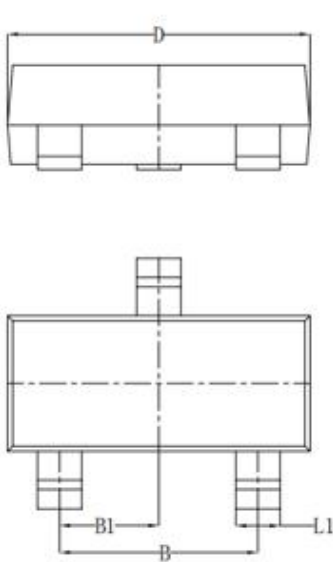


Figure 11. Maximum Safe Operating Area

Package Information

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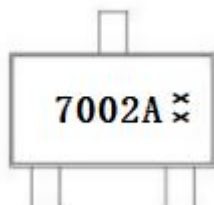


Detail L

Symbol	Dim in mm		
	Min	Nor	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600

Marking Information

SOT-23



Mechanical Data

- Case: SOT-23
- Marking: 7002Axx