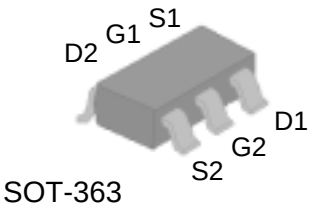
Dual N-channel Enhancement-mode Power MOSFETs

PRODUCT SUMMARY

BV_{DSS}	50V
$R_{DS(ON)}$	3Ω
I_D	250mA

Pb-free; RoHS-compliant SOT-363



SOT-363

DESCRIPTION

The SSM7002DG acheives fast switching performance with low gate charge without a complex drive circuit. It is suitable for low voltage applications such as DC/DC converters and general load-switching circuits.

The SSM7002DGU is supplied in a RoHS-compliant SOT-363 package, which is widely used where board space is critical and a small footprint is required.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Units
V_{DS}	Drain-source voltage	50	V
V_{GS}	Gate-source voltage	± 20	V
I_D	Continuous drain current [3], T_A = 25°C	250	mA
I_{SD}	Source-drain diode current	115	mA
I_{DM}	Pulsed drain current [1,2]	1.0	A
P_D	Total power dissipation [3], T_A = 25°C	200	mW
	T_A = 75°C	120	mW
T_{STG}	Storage temperature range	-55 to 150	°C
T_J	Operating junction temperature range	-55 to 150	°C

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Units
$R_{\Theta JA}$	Maximum thermal resistance, junction-ambient[3]	625	°C/W

Notes:

1.Pulse width must be limited to avoid exceeding the maximum junction temperature of 150°C.

2.Pulse width <300us, duty cycle <2%.

3.Mounted on FR4 board

ELECTRICAL CHARACTERISTICS (at Tj = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-source breakdown voltage	V_{GS}=0V, I_D=10uA	50	-	-	V
$I_{D(ON)}$	On-state drain current	V_{DS}= 7V, V_{GS}=10V	500	-	-	mA
$R_{DS(ON)}$	Static drain-source on-resistance	V_{GS}=10V, I_D =250mA	-	-	3	Ω
		V_{GS}=5V, I_D =50mA	-	-	4	Ω
$V_{GS(th)}$	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	2.5	V
g_{fs}	Forward transconductance	V_{DS}=7V, I_D=200mA	80	-	-	mS
I_{DSS}	Drain-source leakage current	V_{DS}=50V, V_{GS}=0V	-	-	1.0	uA
I_{GSS}	Gate-source leakage current	V_{GS}=±20V	-	-	±100	nA
$t_{d(on)}$	Turn-on delay time [2]	V_{DS}=30V	-	7.5	20	ns
t_r	Rise time	I_D=100mA	-	6	-	ns
$t_{d(off)}$	Turn-off delay time	R_G=10Ω , V_{GEN}=10V	-	7.5	20	ns
t_f	Fall time		-	3	-	ns
C_{iss}	Input capacitance	V_{GS}=0V	-	19	50	pF
C_{oss}	Output capacitance	V_{DS}=25V	-	10	25	pF
C_{rss}	Reverse transfer capacitance	f=1.0MHz	-	3	5	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward voltage [2]	I_S=115mA, V_{GS}=0V	-	0.76	1.5	V

Notes:

1.Pulse width must be limited to avoid exceeding the maximum junction temperature of 150°C.

2.Pulse width <300us, duty cycle <2%.

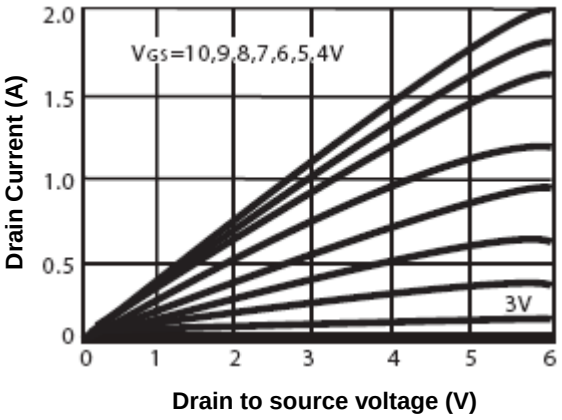


Fig 1. Typical output characteristics

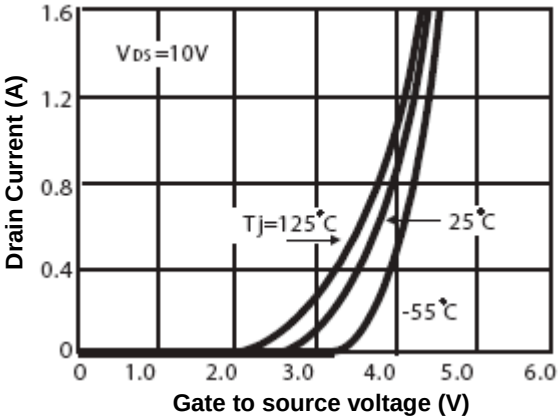


Fig 2. Typical transfer characteristics

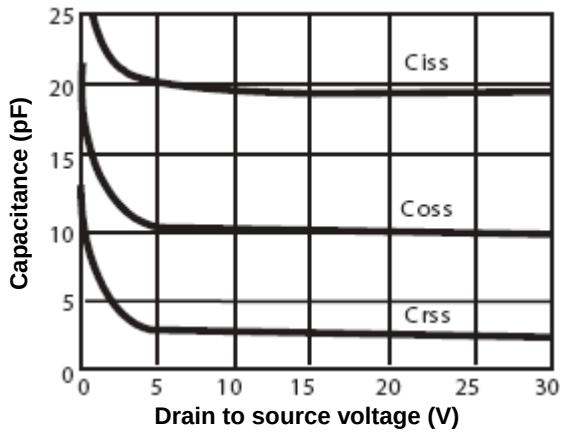


Fig 3. Typical Capacitance

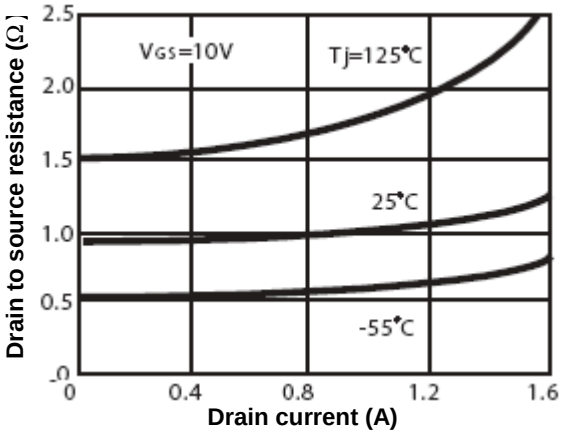


Fig 4. Normalized on-resistance vs. junction temperature

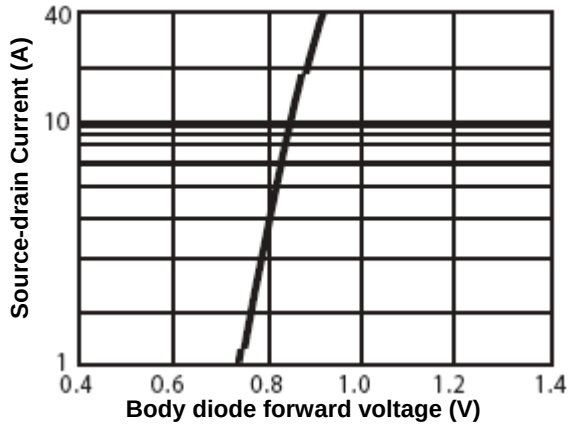


Fig 5. Forward characteristics of the reverse diode

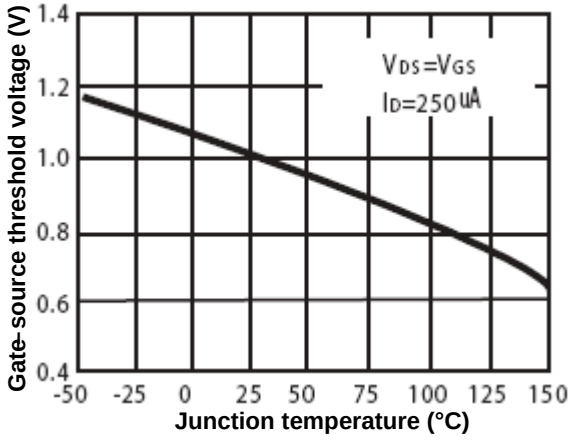


Fig 6. Gate threshold voltage vs. junction temperature

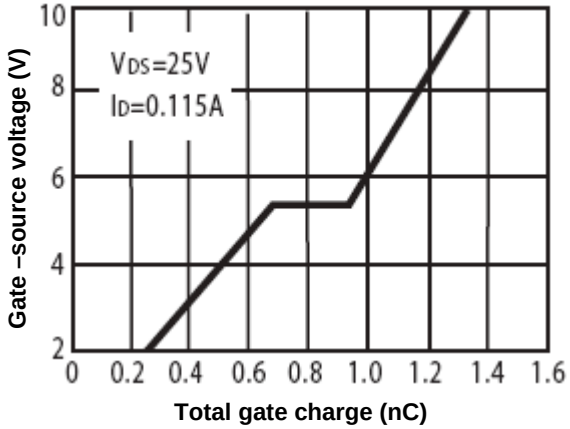


Fig 7. Gate charge characteristics

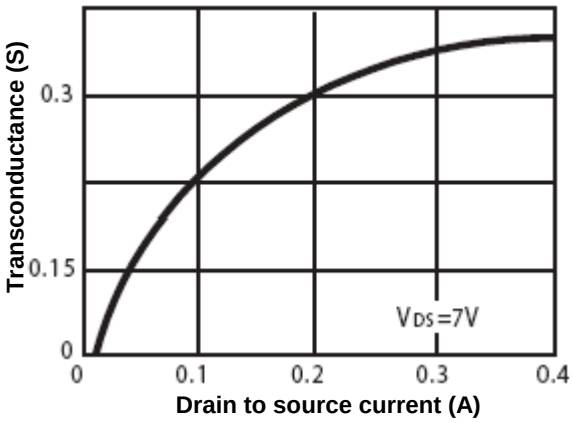


Fig 8. Typical transconductance

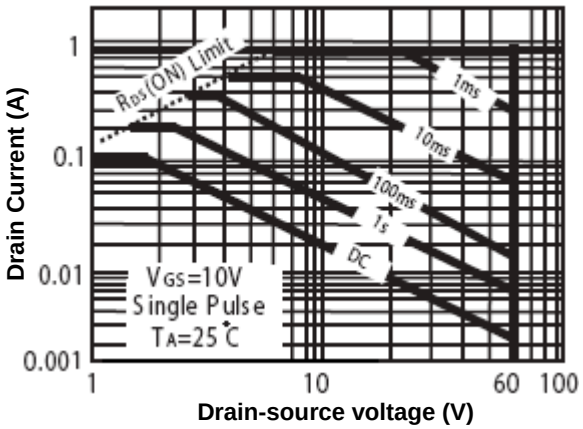


Fig 9. Maximum safe operating area

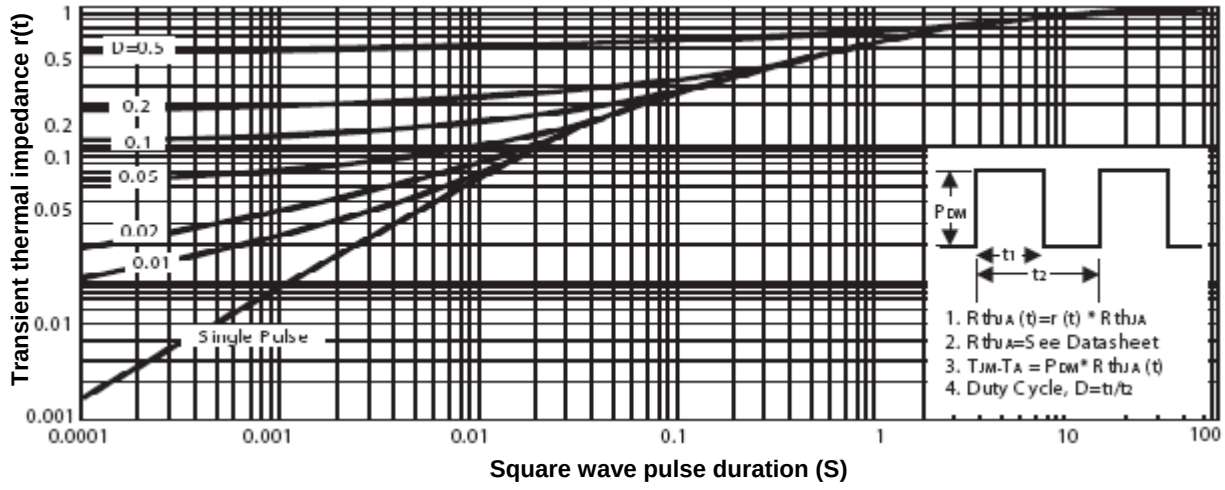
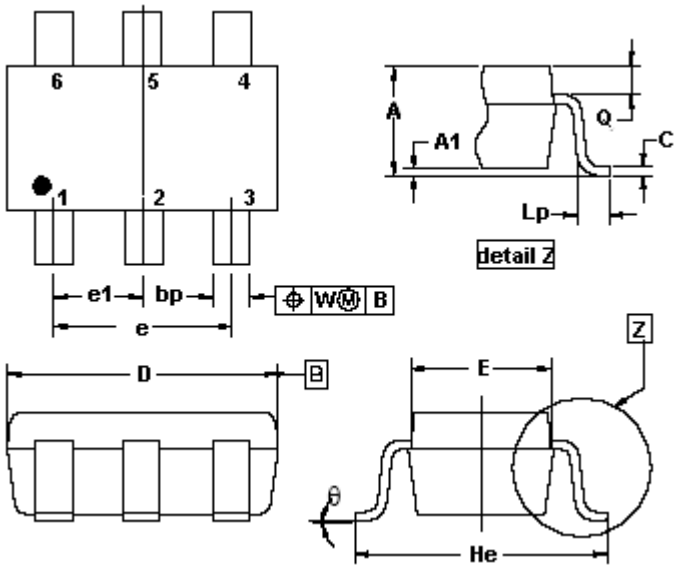


Fig 10. Normalized Transient Thermal Impedance

PHYSICAL DIMENSIONS

SOT-363



SOT-363 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.10	0.031	0.043
A1	--	0.10	--	0.004
bp	0.10	0.30	0.004	0.012
C	0.10	0.25	0.004	0.010
D	1.80	2.20	0.071	0.087
E	1.15	1.35	0.045	0.053
e	1.30 (typ)		0.052 (typ)	
e1	0.65 (typ)		0.026(typ)	
He	2.00	2.20	0.079	0.087
Lp	0.10	0.3	0.004	0.012
Q	0.20 (typ)		0.008 (typ)	
W	0.20 (typ)		0.008 (typ)	
Θ	10^{o} (typ)		10^{o} (typ)	

PACKING: Moisture sensitivity level MSL3

3000 pcs in antistatic tape on a reel packed in a moisture barrier bag (MBB).