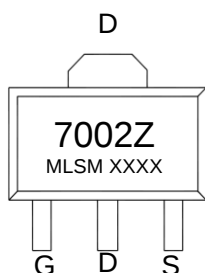


Features

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

Application

- Load Switch for Portable Devices
- DC/DC Converter

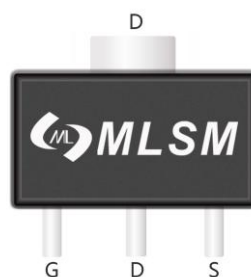


7002Z: Device code
XXXX : Code

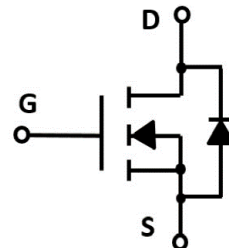
Marking and pin assignment

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
60V	0.85Ω@10V	0.115A
	1.0Ω@5V	



SOT-89-3L top view



Schematic diagram



Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
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Common Ratings (TC=25°C Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-50 to 155	°C
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 0.115	A

Mounted on Large Heat Sink

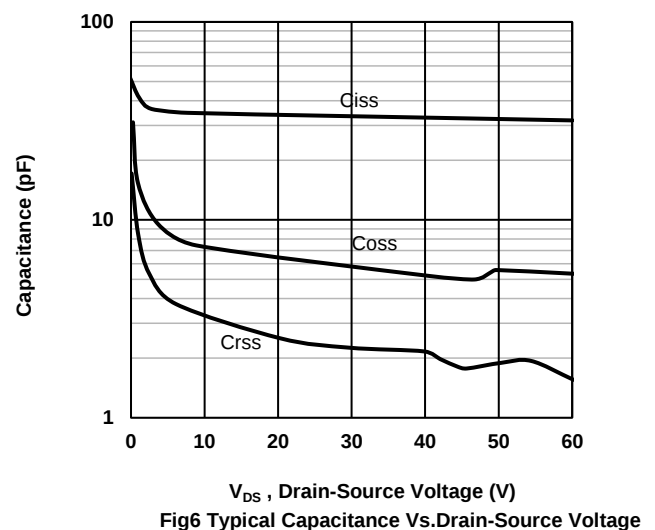
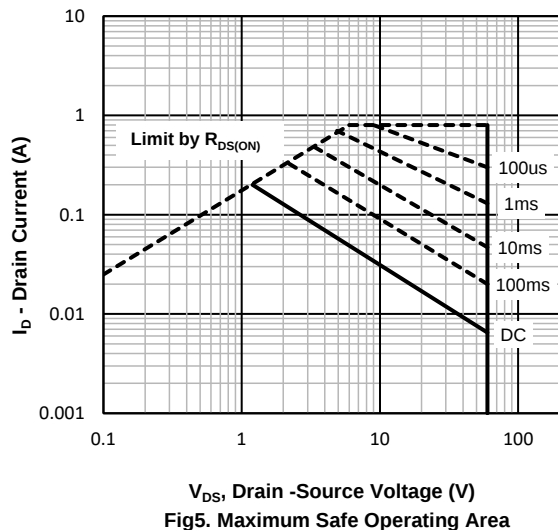
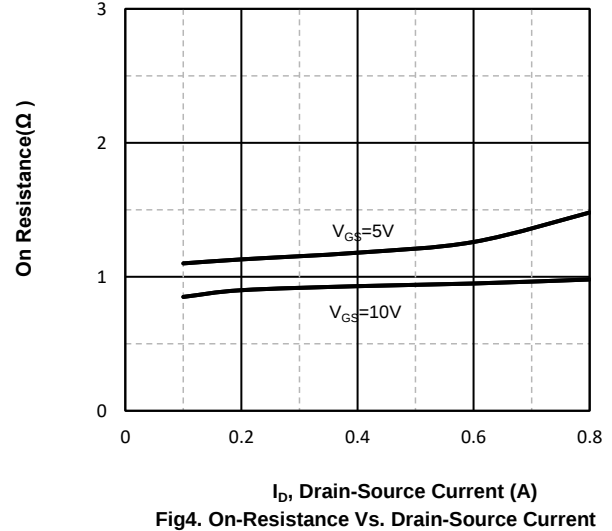
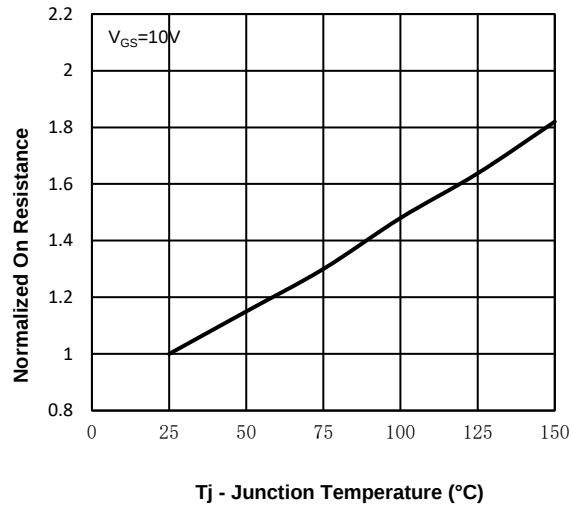
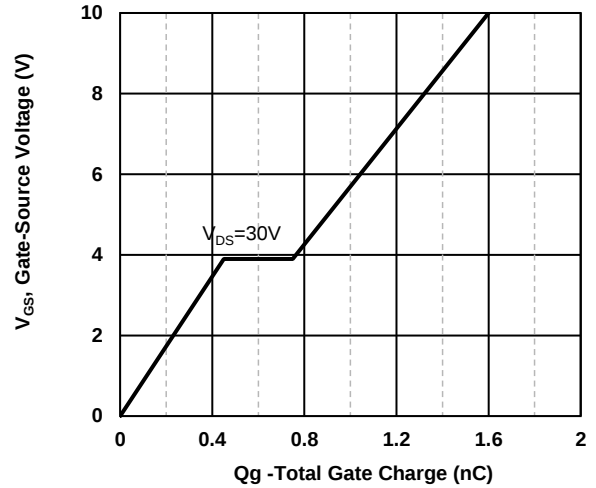
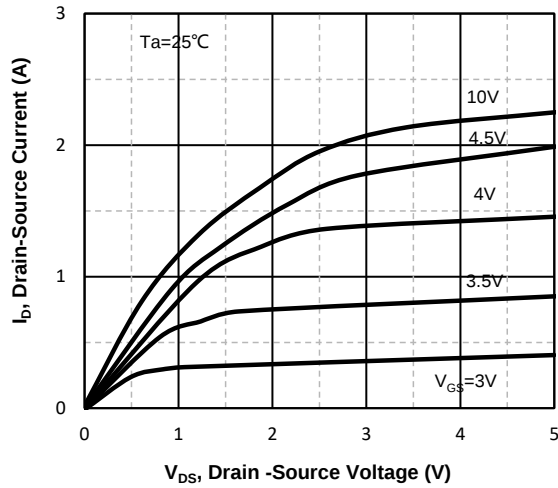
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 0.8	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 0.115	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 0.225	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	357	°C/W

Ordering Information (Example)

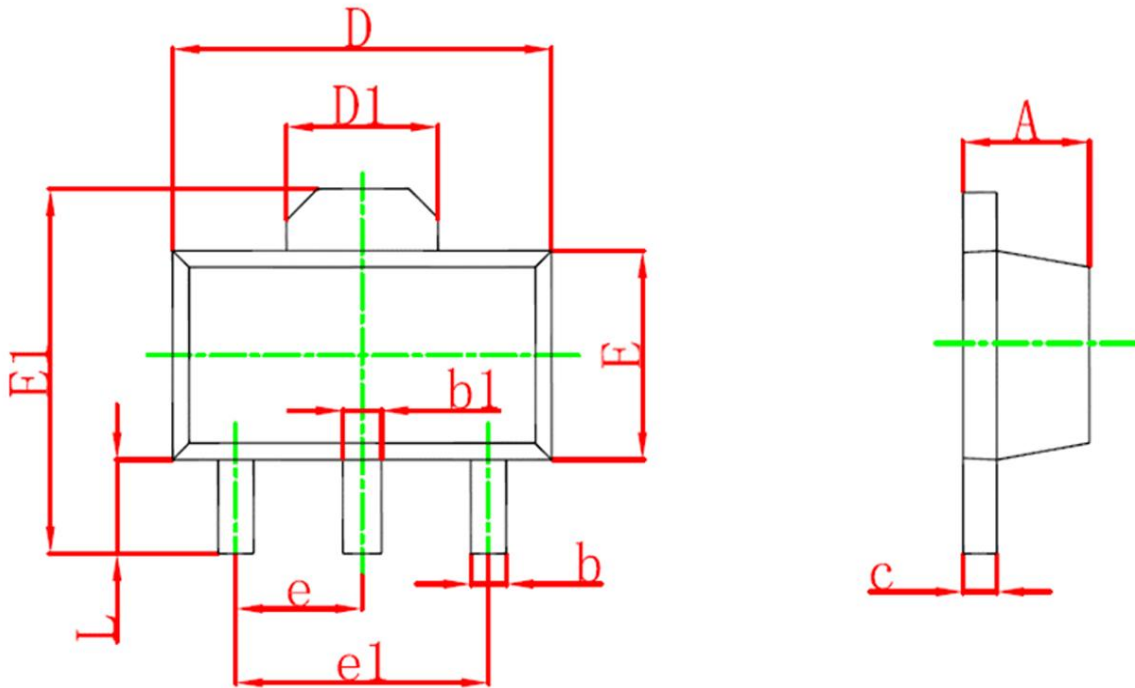
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
2N7002Z	SOT-89-3L	7002Z	1,000	10,000	40,000	7"reel

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
BV _{(BR)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}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =0.3A	--	0.85	5.0	Ω
		V _{GS} =5V, I _D =0.05A	--	1.0	7.0	Ω
Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	27	--	pF
C _{OSS}	Output Capacitance		--	2.75	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	2	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =30V, I _D =0.3A, V _{GS} =10V	--	1.7	--	nC
Q _{gs}	Gate-Source Charge		--	0.57	--	nC
Q _{gd}	Gate-Drain Charge		--	0.3	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V, I _D =0.3A, V _{GS} =10V, R _G =3Ω	--	4	--	nS
t _r	Turn-on Rise Time		--	19	--	nS
t _{d(off)}	Turn-Off Delay Time		--	12	--	nS
t _f	Turn-off fall Time		--	24	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25℃, Is=0.3A	--	--	1.2	V

Typical Operating Characteristics



SOT-89-3L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions in Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047