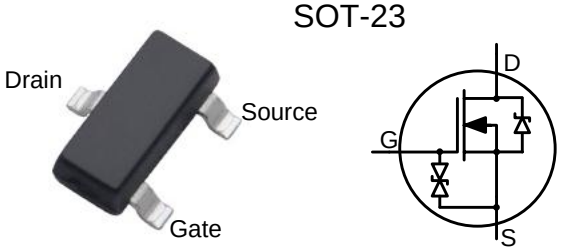
Depletion-Mode Power MOSFET

General Features

- ESD improved Capability
- Depletion Mode (Normally On)
- Proprietary Advanced Planar Technology
- Rugged Polysilicon Gate Cell Structure
- Fast Switching Speed
- RoHS Compliant
- Halogen-free available

BV_{DSX}	$R_{DS(ON)}$ (Max.)	$I_{DSS,min}$
150V	15 Ω	200mA

SOT-23



Applications

- Synchronous Rectification
- Normally-on Switches
- Linear Amplifier
- Converters
- Constant Current Source
- Telecom

Ordering Information

Part Number	Package	Marking	Remark
HM2015E	SOT-23	152***	Halogen Free

Absolute Maximum Ratings

T_A=25℃ unless otherwise specified

Symbol	Parameter	HM2015E	Unit
V_{DSX}	Drain-to-Source Voltage[1]	150	V
V_{DGX}	Drain-to-Gate Voltage[1]	150	V
I_D	Continuous Drain Current	0.2	A
I_{DM}	Pulsed Drain Current[2]	0.6	
P_D	Power Dissipation	0.50	W
V_{GS}	Gate-to-Source Voltage	±20	V
T_L	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	℃
T_J and T_{STG}	Operating and Storage Temperature Range	-55 to 150	

Caution: Stresses greater than those listed in the"Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	HM2015E	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	250	K/W

Electrical Characteristics

OFF Characteristics

T_A =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	150	--	--	V	V_{GS}=-15V, I_D=250μA
$I_{D(OFF)}$	Drain-to-Source Leakage Current	--	--	10	μA	V_{DS}=150V， V_{GS}= -15V
		--	--	1.0	mA	V_{DS}=150V， V_{GS}= -15V T_J=125℃
I_{GSS}	Gate-to-Source Leakage Current	--	--	20	uA	V_{GS}=+20V, V_{DS}=0V
		--	--	-20		V_{GS}=-20V, V_{DS}=0V

ON Characteristics

T_A =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
I_{DSS}	Saturated Drain-to-Source Current	200	--	--	mA	V_{GS}=0V, V_{DS}=25V
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	10	15	Ω	V_{GS}=0V， I_D=200mA [3]
$V_{GS(OFF)}$	Gate-to-Source Cut-off Voltage	-7	--	-5	V	V_{DS} =3V, I_D=8μA
gfs	Forward Transconductance	--	0.24	--	S	V_{DS} =10V, I_D=100mA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{ISS}	Input Capacitance	--	12.8	--	pF	V_{GS}=-10V V_{DS}=25V f=1.0MH_Z
C_{OSS}	Oput Capacitance	--	5.4	--		
C_{RSS}	Reverse Transfer Capacitance	--	3.3	--		
Q_G	Total Gate Charge	--	3	--	nC	V_{GS}= -10V~0V V_{DS}=75V, I_D=200mA
Q_{GS}	Gate-to-Source Charge	--	0.23	--		
Q_{GD}	Gate-to-Drain (Miller) Charge	--	1.1	--		

Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(ON)}$	Turn-on Delay Time	--	7	--	ns	V_{GS} = -10V~0V V_{DD} = 75V, I_D=200mA R_G = 20Ohm
t_{rise}	Rise Time	--	16	--		
$t_{d(OFF)}$	Turn-off Delay Time	--	25	--		
t_{fall}	Fall Time	--	120	--		

Source-Drain Diode Characteristics

T_A=25℃ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Units	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.2	V	I_{SD} =200 mA, V_{GS} = -15 V

NOTE：

[1] T_J=+25℃ to +150℃
[2] Repetitive rating, pulse width limited by maximum junction temperature.
[3] Pulse width≤380μs; duty cycle≤2%.

Figure 1. Maximum Power Dissipation vs. Case Temperature

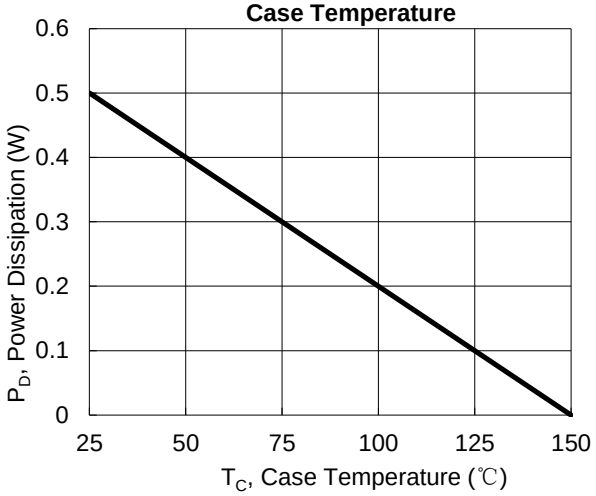


Figure 2. Maximum Continuous Drain Current vs Case Temperature

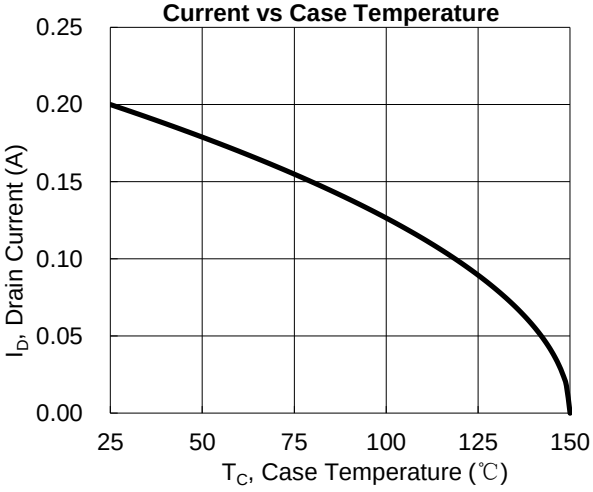


Figure 3. Typical Output Characteristics

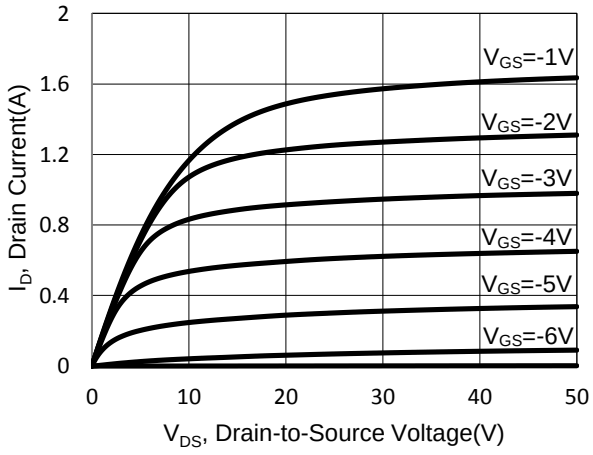
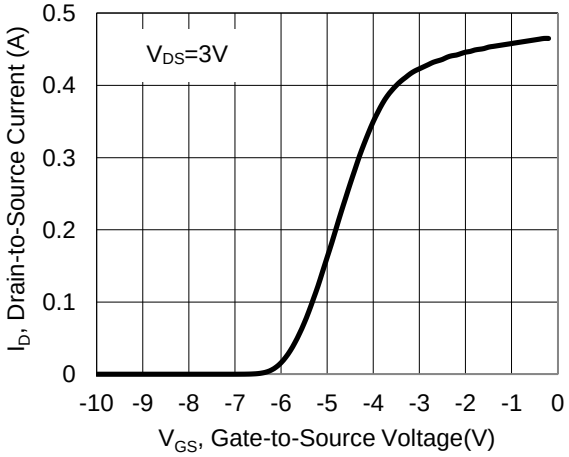


Figure 4. Typical Transfer Characteristics



Package Dimensions

