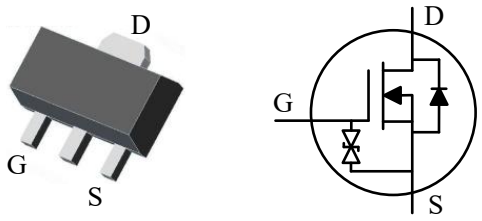
600V N-Channel Depletion-Mode Power MOSFET

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}	$R_{DS(on)(Max.)}$	$I_{DSS(Min.)}$
600V	**150Ω**	**80mA**

SOT-89



Applications

- Normally-on Switches
- SMPS Start-up Circuit
- Linear Amplifier
- Converters
- Constant Current Source
- Telecom

Ordering Information

Part Number	Package	Marking	Remark
DMX6014E	SOT-89	6014	Halogen Free

Absolute Maximum Ratings

T_A = 25°C unless otherwise specified

Symbol	Parameter	DMX6014E	Unit
V_{DSX}	Drain-to-Source Voltage [1]	600	V
V_{DGX}	Drain-to-Gate Voltage [1]	600	V
V_{GS}	Gate-to-Source Voltage	±20	V
I_D	Continuous Drain Current [2]	0.08	A
I_{DM}	Pulsed Drain Current [3]	0.32	A
P_D	Power Dissipation [4]	1.0	W
T_L	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	°C
T_J & T_{STG}	Operating and Storage Temperature Range	-55 to 150	°C

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

Thermal Characteristics

Symbol	Parameter	DMX6014E	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	125	°C/W

Electrical Characteristics

OFF Characteristics

T_A = 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	600	--	--	V	V_{GS} = -5V, I_D = 250μA
$I_{D(off)}$	Drain-to-Source Leakage Current	--	--	1	μA	V_{DS} = 600V, V_{GS} = -5V
		--	--	100	μA	V_{DS} = 600V, V_{GS} = -5V T_J = 125°C
I_{GSS}	Gate-to-Source Leakage Current	--	--	20	μA	V_{GS} = 20V, V_{DS} = 0V
		--	--	-20		V_{GS} = -20V, V_{DS} = 0V

ON Characteristics

T_A = 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
I_{DSS}	Saturated Drain-to-Source Current	80	--	--	mA	V_{GS} = 0V, V_{DS} = 25V [5]
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	--	110	150	Ω	V_{GS} = 0V, I_D = 50mA [5]
$V_{GS(off)}$	Gate-to-Source Cut-off Voltage	-3.3	--	-1.5	V	V_{DS} = 3V, I_D = 8μA
g_{fs}	Forward Transconductance	--	77	--	mS	V_{DS} = 10V, I_D = 5mA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{iss}	Input Capacitance	--	62	--	pF	V_{GS} = -5V, V_{DS} = 25V, f = 1.0MHz
C_{oss}	Output Capacitance	--	13	--		
C_{rss}	Reverse Transfer Capacitance	--	9	--		
Q_g	Total Gate Charge	--	8	--	nC	V_{GS} = -5 to 5V, V_{DS} = 300V, I_D = 7mA
Q_{gs}	Gate-to-Source Charge	--	0.6	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	3	--		

Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(on)}$	Turn-on Delay Time	--	10	--	ns	V_{GS} = -5 to 5V, V_{DD} = 300V, I_D = 7mA, R_G = 20Ω
t_r	Rise Time	--	22	--		
$t_{d(off)}$	Turn-off Delay Time	--	35	--		
t_f	Fall Time	--	210	--		

Source-Drain Diode Characteristics

T_A = 25℃ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.2	V	I_{SD} = 100mA, V_{GS} = -10V

NOTE：

[1] T_J = +25℃ to +150℃.
[2] V_{GS} = 0V.
[3] Repetitive rating, pulse width limited by maximum junction temperature.
[4] T_C = +25℃.
[5] Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Characteristics

Figure 1. Maximum Power Dissipation vs. Case Temperature

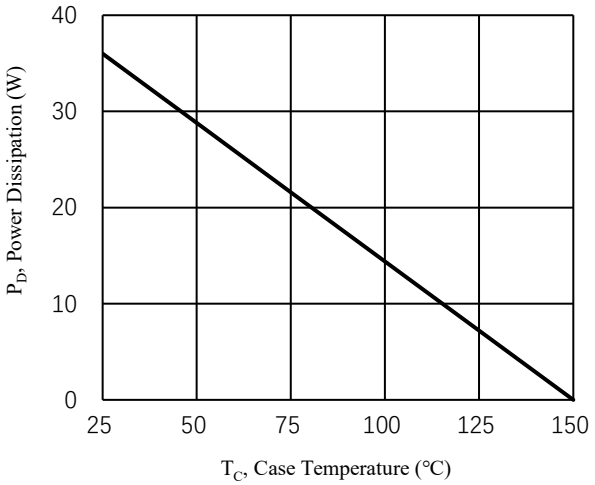


Figure 2. Maximum Continuous Drain Current vs. Case Temperature

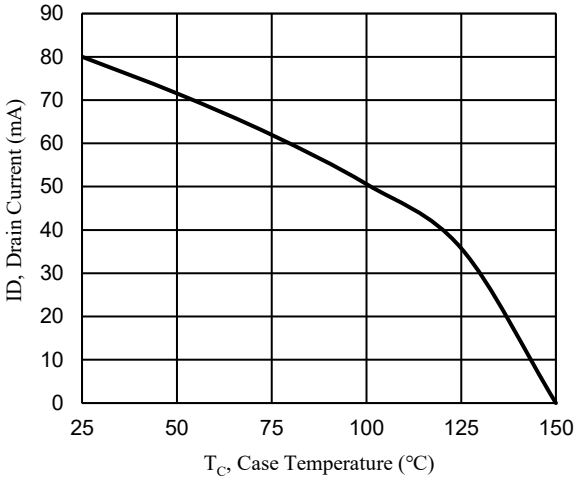


Figure 3.Typical Output Characteristics

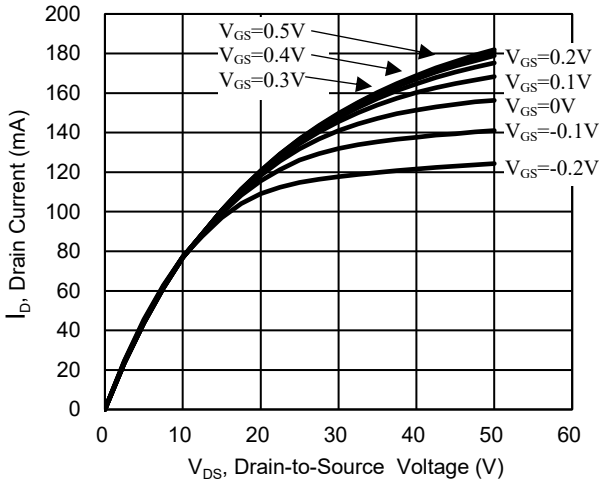


Figure 4. Typical Transfer Characteristics

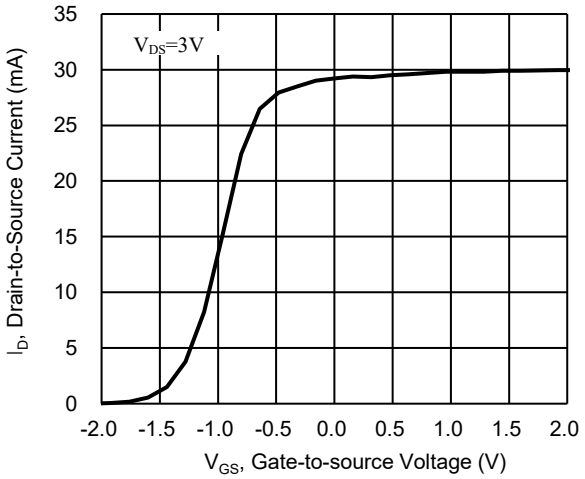


Figure 5. Typical Capacitance vs. Drain-to-Source Voltage

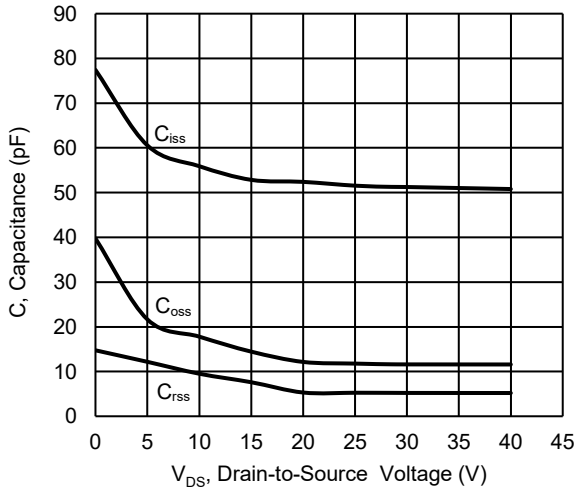
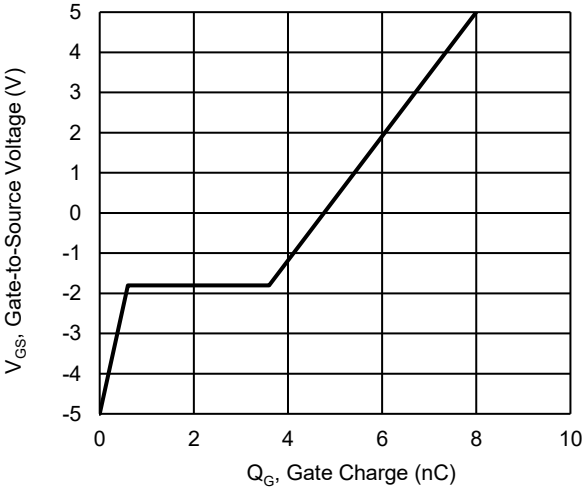
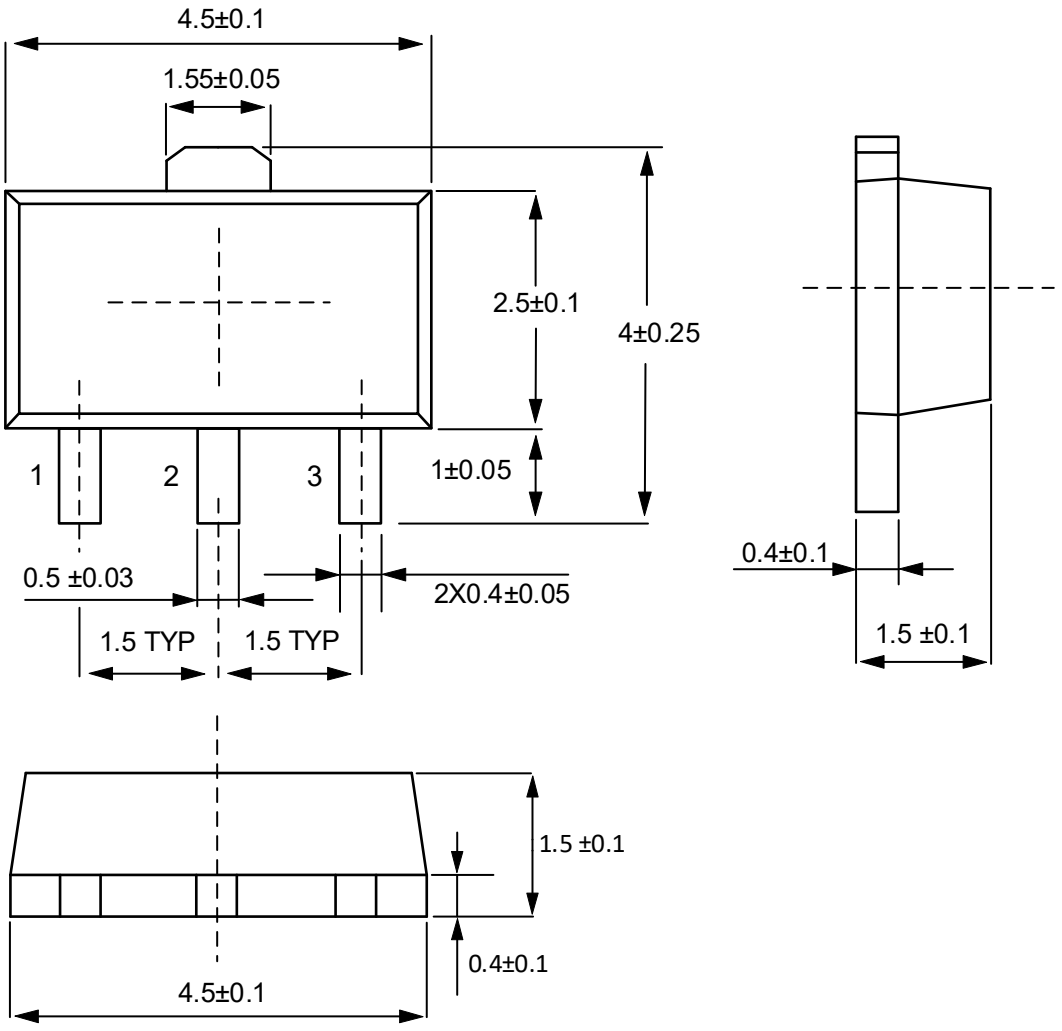


Figure 6. Typical Gate Charge vs. Gate-to-Source Voltage



Package Dimensions

SOT-89



Unit：mm

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