

DESCRIPTION

The MX3400H uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.

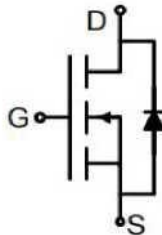
GENERAL FEATURES

- $V_{DS}=30V$, $I_D=5.6A$
 $R_{DS(ON)}(Typ.)=34m\Omega$ @ $V_{GS}=2.5V$
 $R_{DS(ON)}(Typ.)=25m\Omega$ @ $V_{GS}=4.5V$
 $R_{DS(ON)}(Typ.)=21m\Omega$ @ $V_{GS}=10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

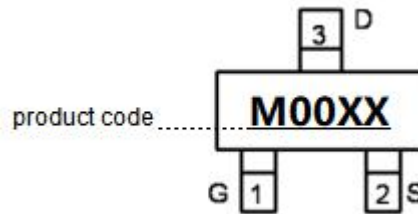
APPLICATION

- PWM applications
- Load switch
- Power management

PINOUT



Schematic diagram



Marking and pin Assignment



SOT-23-3L top view

ORDERING INFORMATION

Device	Marking	Storage Temperature	Package	Devices Per Reel
MX3400H	M00XX	-55°C to 150°C	SOT-23-3L	3000

KEY PERFORMANCE PARAMETERS ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	30	V
Gate-Source Voltage ($V_{DS}=0V$)	V_{GS}	± 12	V
Drain Current-Continuous	I_D	5.6	A
Drain Current-Continuous@Current-Pulsed ^(Note 1)	$I_{DM(pluse)}$	30	A
Maximum Power Dissipation	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	°C

THERMAL CHARACTERISTIC

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	85	°C/W

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature



ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
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On/Off Characteristics

Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.9	1.4	V
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=4.2A$	2	8	-	S
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=2.5V, I_D=2A$	-	34	55	m Ω
		$V_{GS}=4.5V, I_D=4A$	-	25	40	m Ω
		$V_{GS}=10V, I_D=4.2A$	-	21	30	m Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, F=1.0MHz$	-	680	-	pF
Output Capacitance	C_{oss}		-	108	-	pF
Reverse Transfer Capacitance	C_{rss}		-	72	-	pF

Switching Characteristics

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=1A, R_L=15\Omega, V_{GS}=10V, R_G=2.5\Omega$	-	4	-	nS
Turn-on Rise Time	t_r		-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	27	-	nS
Turn-Off Fall Time	t_f		-	5	-	nS
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=4.9A, V_{GS}=10V$	-	10	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	nC
Gate-Drain Charge	Q_{gd}		-	3	-	nC

Source-Drain Diode Characteristics

Forward On Voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_S=1A$	-	0.78	1.2	V
Source-Drain Current(Body Diode)	I_{SD}		-	-	5.6	A

Notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1. Switching Test Circuit

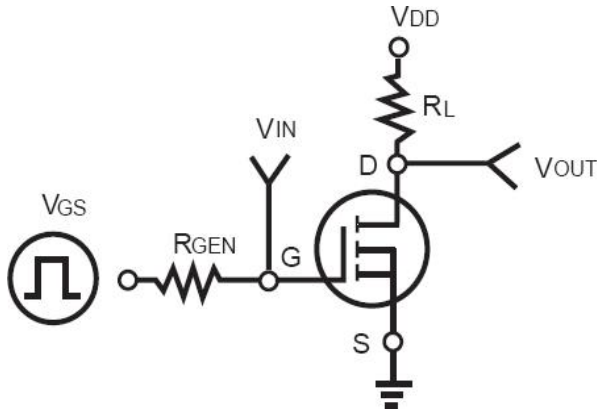


Figure2. Switching Waveform

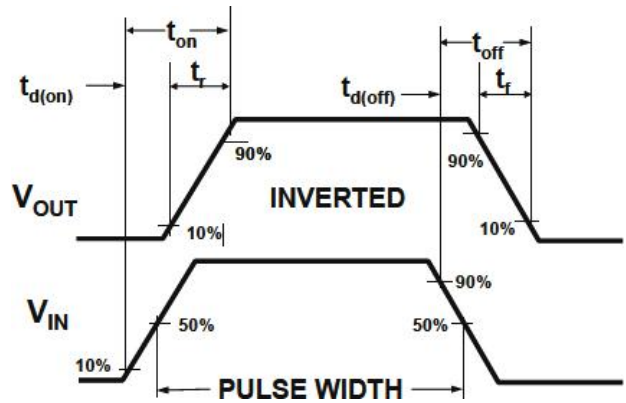


Figure3. Power Dissipation

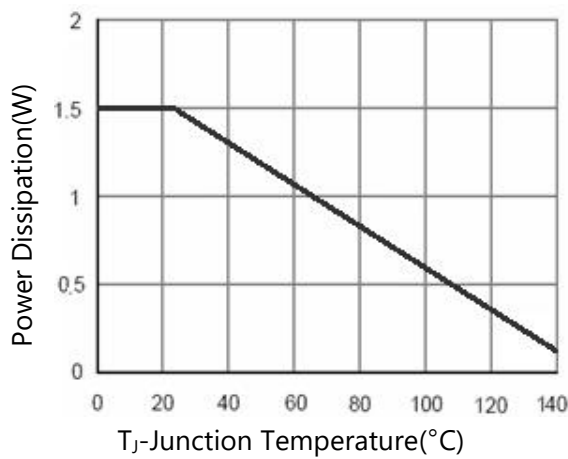


Figure4. Drain Current

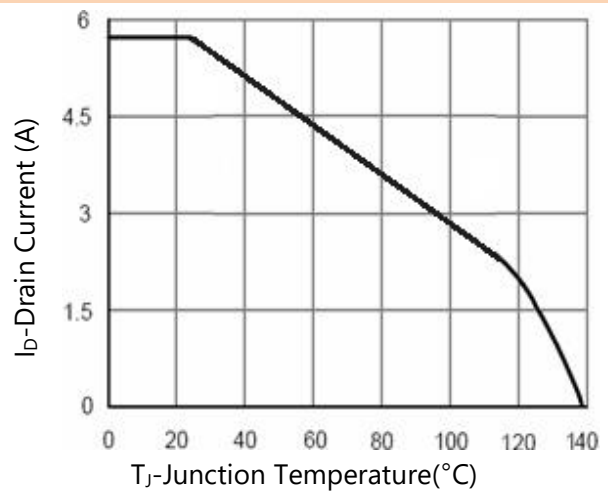


Figure5. Output Characteristics

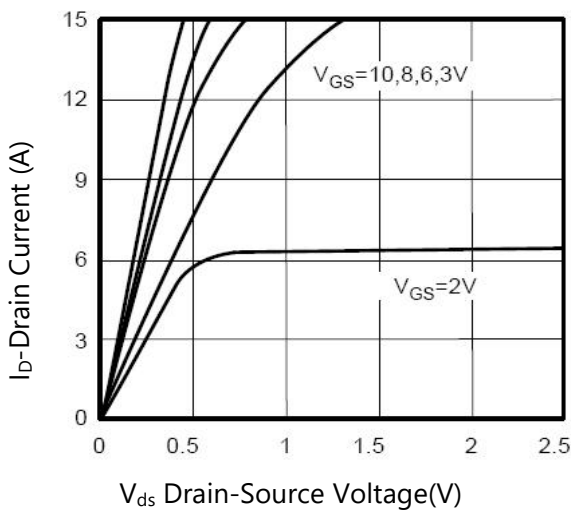
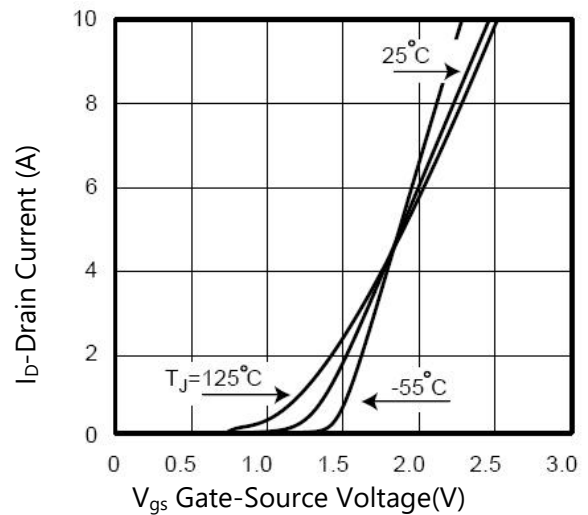


Figure6. Transfer Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS

Figure7. Capacitance

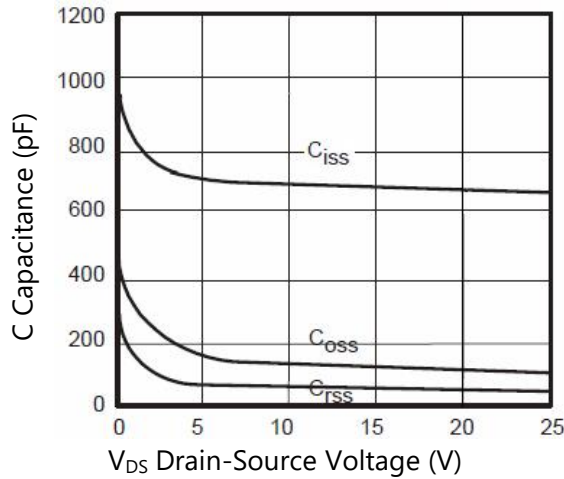


Figure8. $R_{DS(ON)}$ vs Junction Temperature

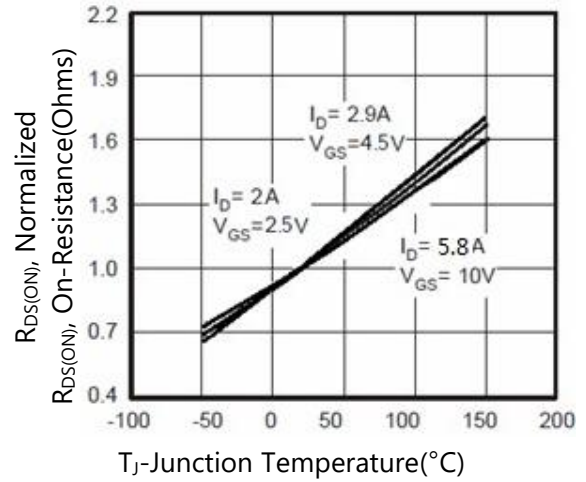


Figure9. Max BV_{DSS} vs Junction Temperature

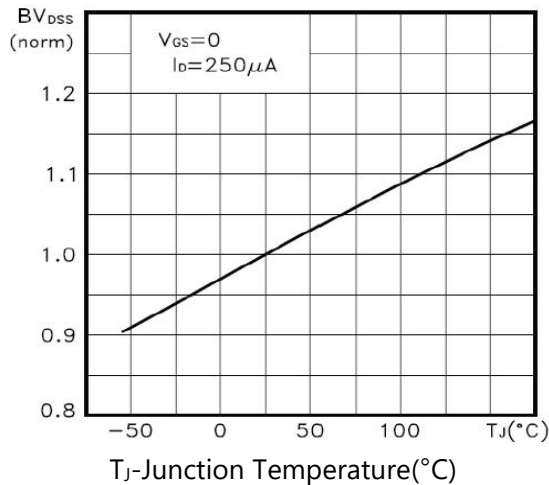


Figure10. $V_{GS(th)}$ vs Junction Temperature

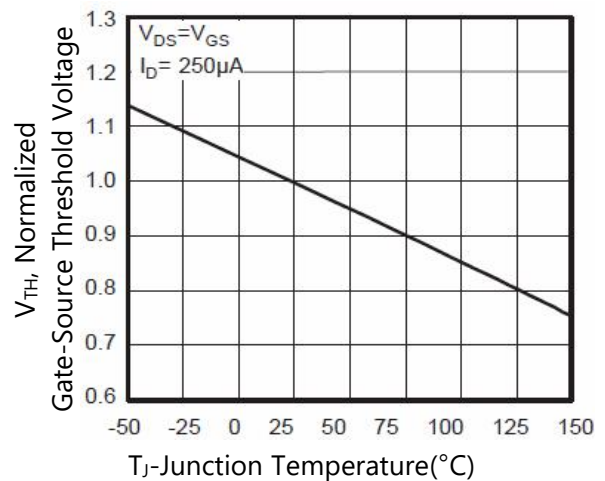


Figure11. Gate Charge Waveforms

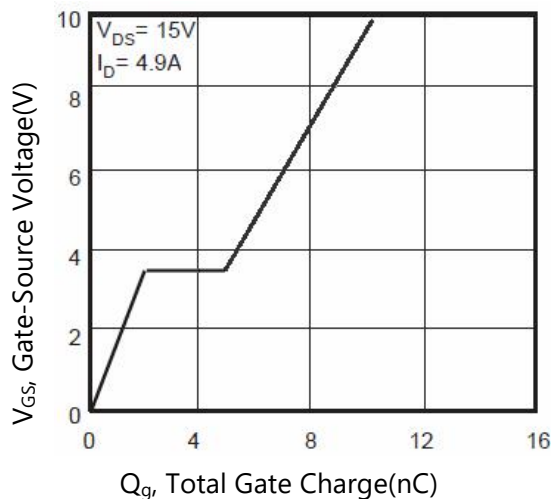
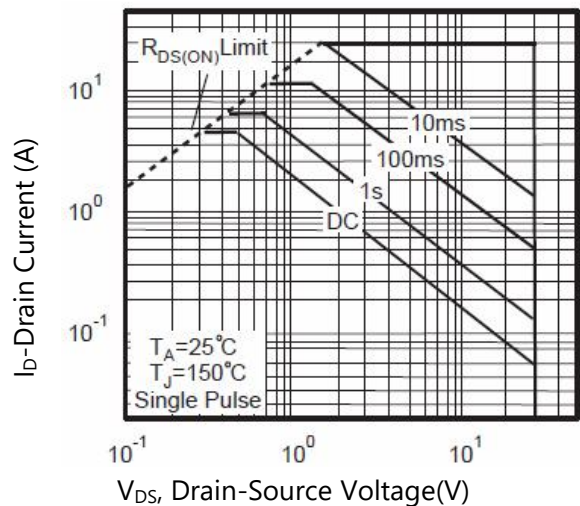
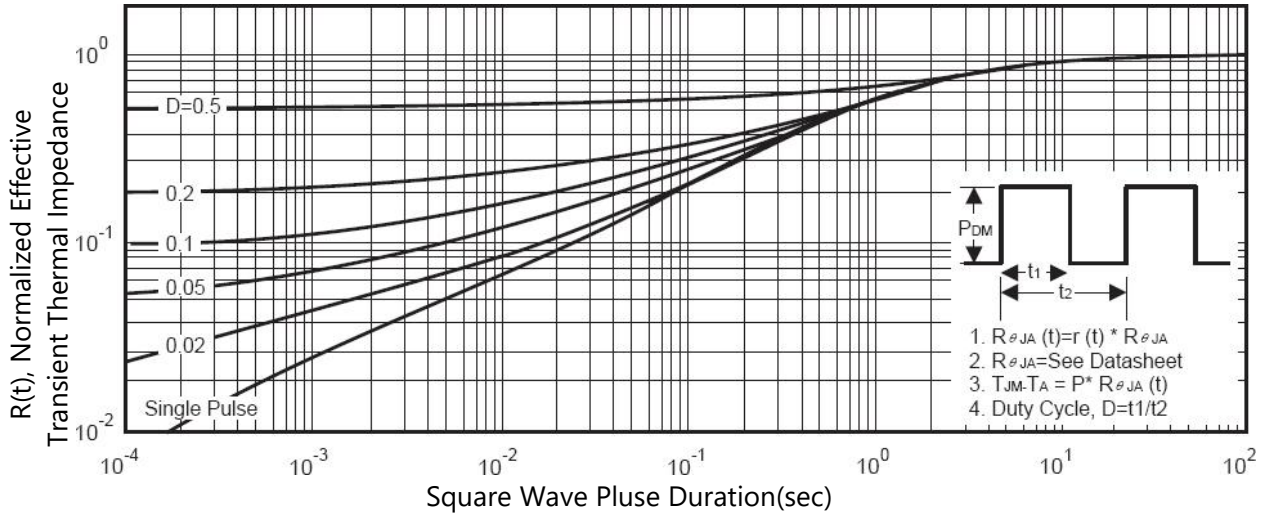


Figure12. Maximum Safe Operating Area



TYPICAL PERFORMANCE CHARACTERISTICS

Figure13. Normalized Maximum Transient Thermal Impedance



PACKAGE INFORMATION

SOT-23-3L

