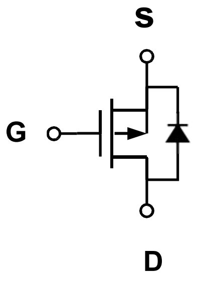
P-Channel Enhancement Mode Power MOSFET

Description

TheMX3407 usesadvanced trench technology to provide excellent $R_{DS(ON)}$, This device is suitable for use as a load switch or in PWM applications.

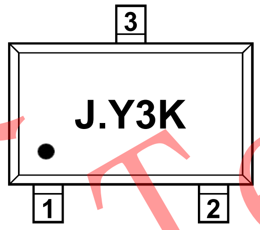


Schematic diagram

General Features

- V_{DS} =-30V，I_D =-4.3A
- $R_{DS(ON)}$(Typ.)＜100mΩ@V_{GS}=-4.5V
- $R_{DS(ON)}$(Typ.)＜50mΩ @V_{GS}=-10V

- High power and current handing capability
- Lead free product is acquired
- Surface mount package



Marking and pin assignment

Application

- PWM applications
- Load switch
- Power management

Sot-23-3 top view

Ordering Information

Part Number	Marking	StorageTemperature	Package	Devices Per Reel
MX3407	J.Y3K	-55°C to +150°C	SOT-23-3	3000

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

parameter	symbol	limit	unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	±20	V
Drain current-continuous	I_D	-4.3	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Drain-source Diode forward current	Is	-1.25	A
Maximum power dissipation	P_D	1.5	W
Operating junction Temperature range	Tj	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V	-	-	-1	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.4	-1.6	-2.4	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.3A	-	38	50	mΩ
		V_{GS}=-4.5V, I_D=-4A	-	60	100	mΩ
Forward transconductance	gfs	V_{GS}=-5V, I_D=-4.1A	5.5	-	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=-15V ,V_{GS}=0V f=1.0MHz	-	700	-	pF
Output capacitance	C_{OSS}		-	120	-	
Reverse transfer capacitance	C_{RSS}		-	75	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DD}=-15V RL=3.6om V_{GS}=-10V R_{GEN}=3ohm	-	9	-	ns
Rise time	tr		-	5	-	
Turn-off delay time	$t_{D(OFF)}$		-	28	-	
Fall time	tf		-	13.5	-	
Total gate charge	Qg	V_{DS}=-15V,I_D=-4.2A V_{GS}=-4.5V	-	14	-	nC
Gate-source charge	Qgs		-	3.1	-	
Gate-drain charge	Qgd		-	3.	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	V_{GS}=0V,Is=-4.2A	-	-	-1.2	V

otes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to product

Typical Performance Characteristics

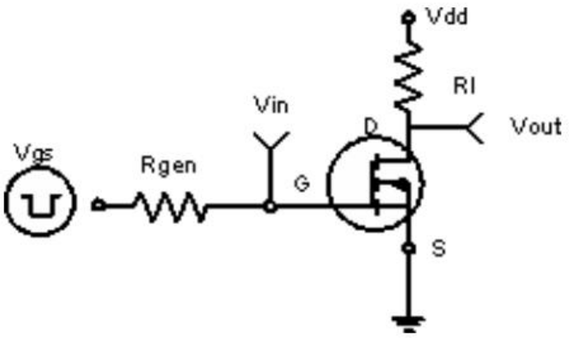


Figure 1:Switching Test Circuit

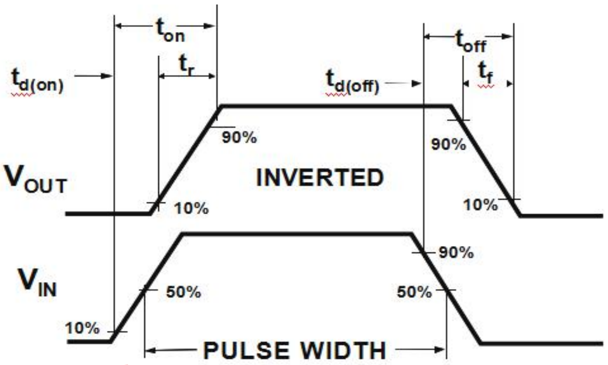


Figure 2:Switching Waveforms

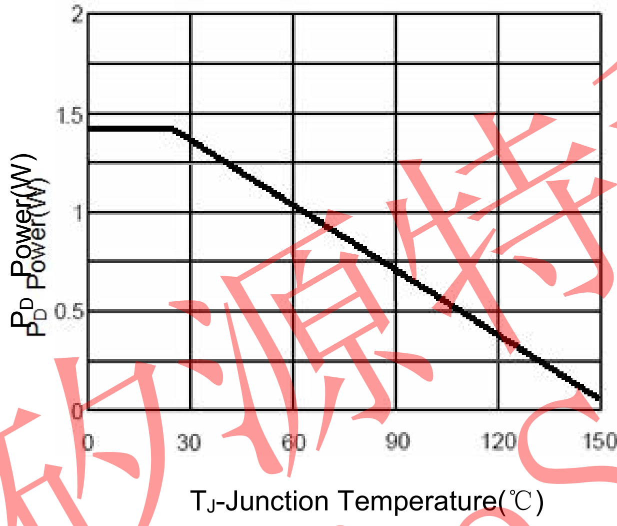


Figure 3 Power Dissipation

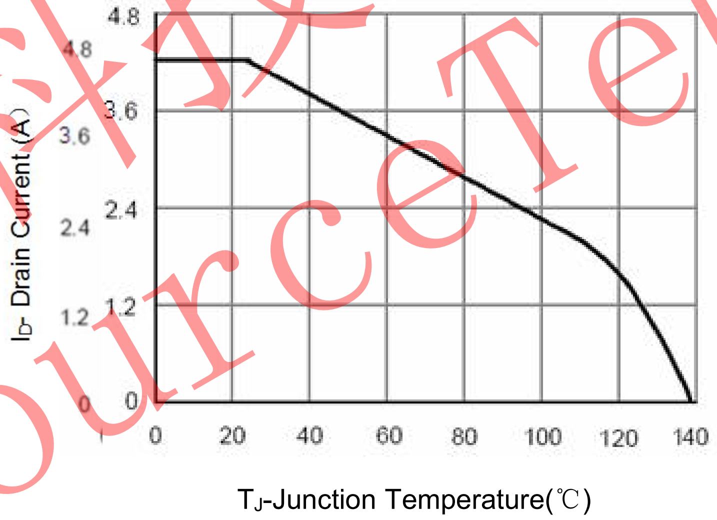
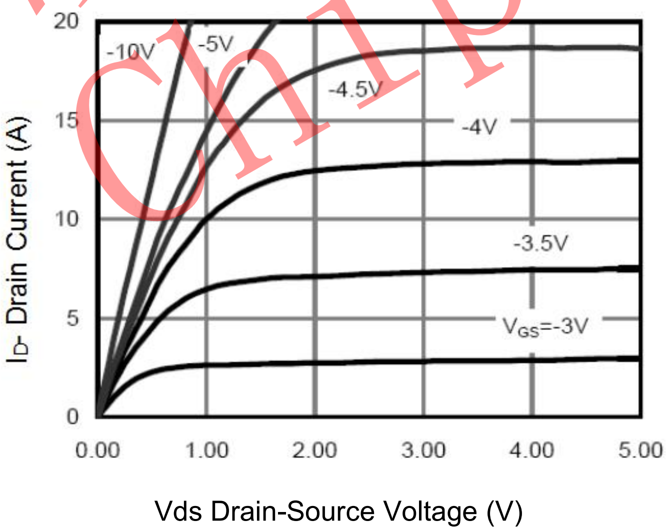


Figure 4 Drain Current



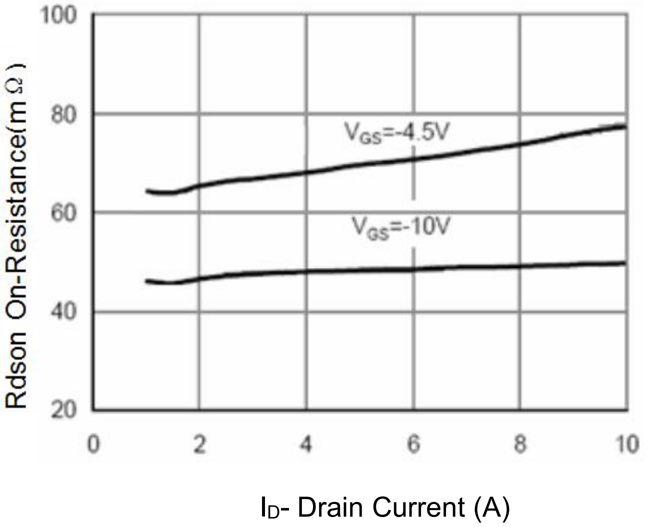


Figure 5 Output CHARACTERISTICS Figure 6 Drain-Source On-Resistance

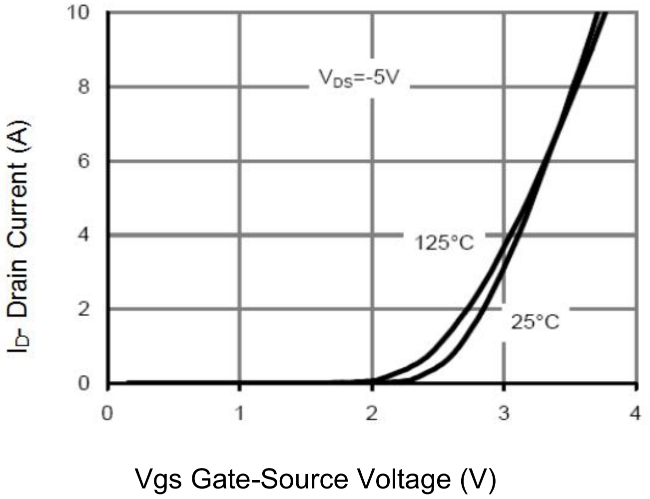


Figure 7 Transfer Characteristics

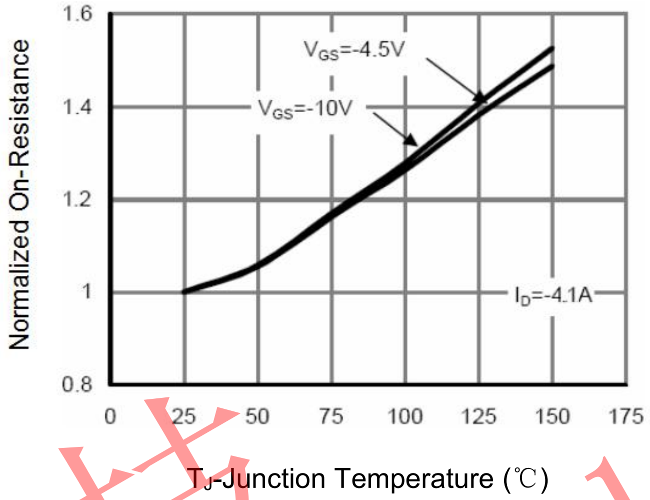


Figure 8 Drain-Source On-Resistance

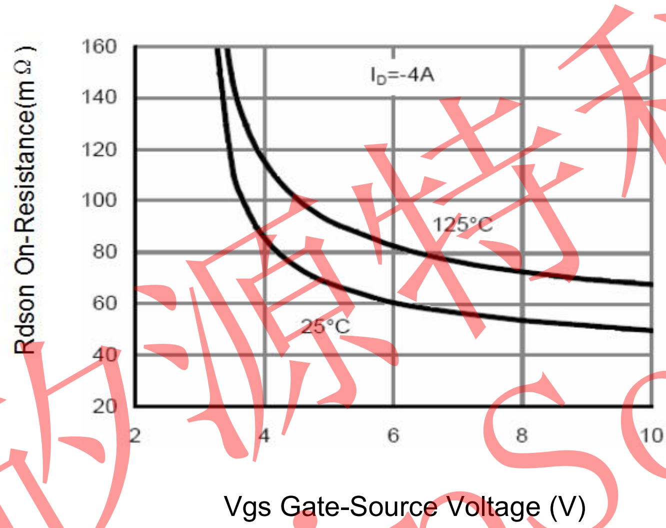


Figure 9 Rdson vs Vgs

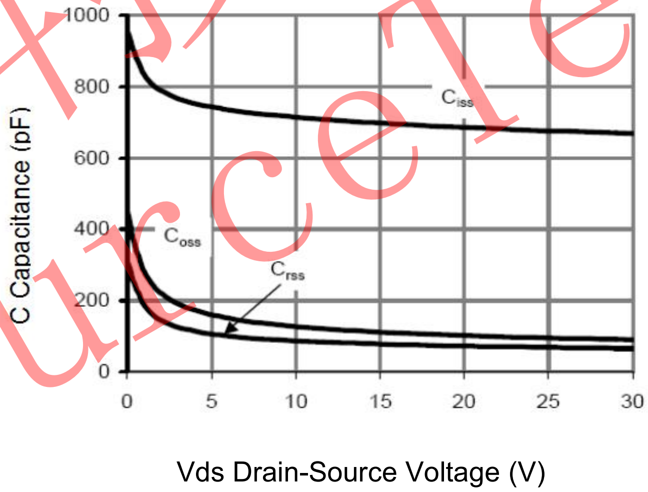


Figure 10 Capacitance vs Vds

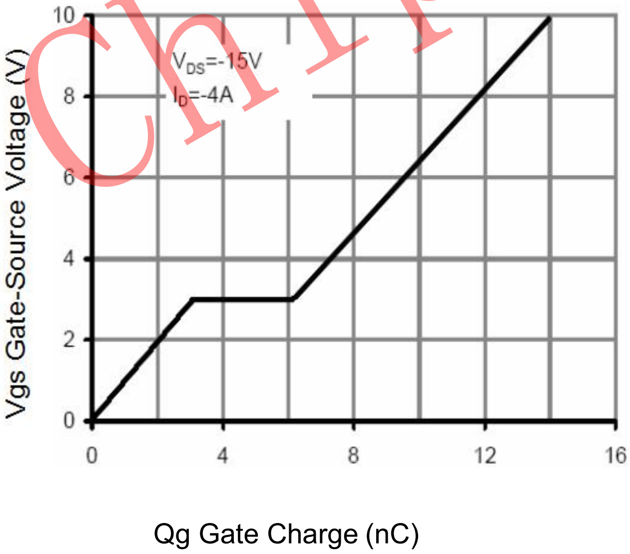


Figure 11 Gate Charge

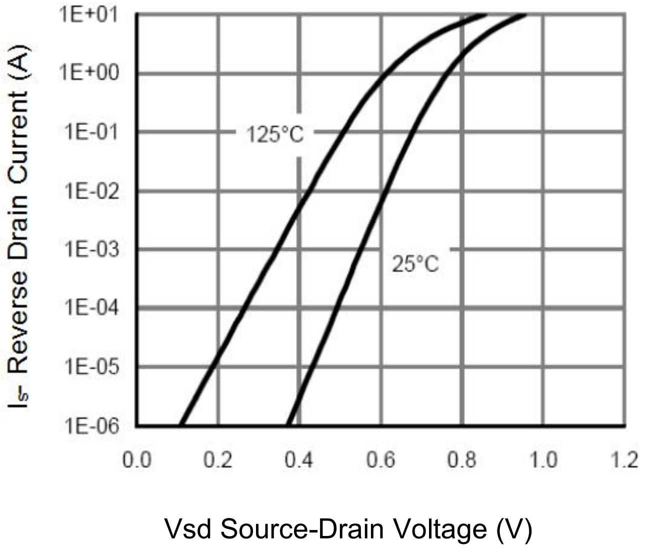


Figure 12 Source- Drain Diode Forward

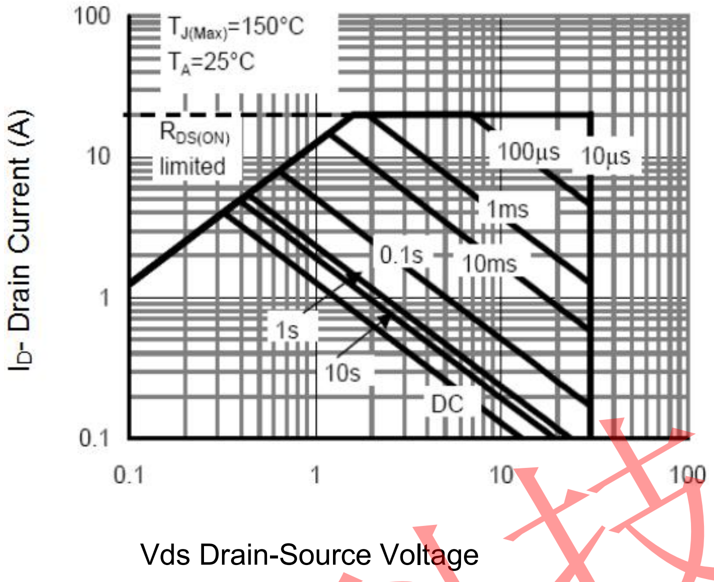


Figure 13Safe Operation Area

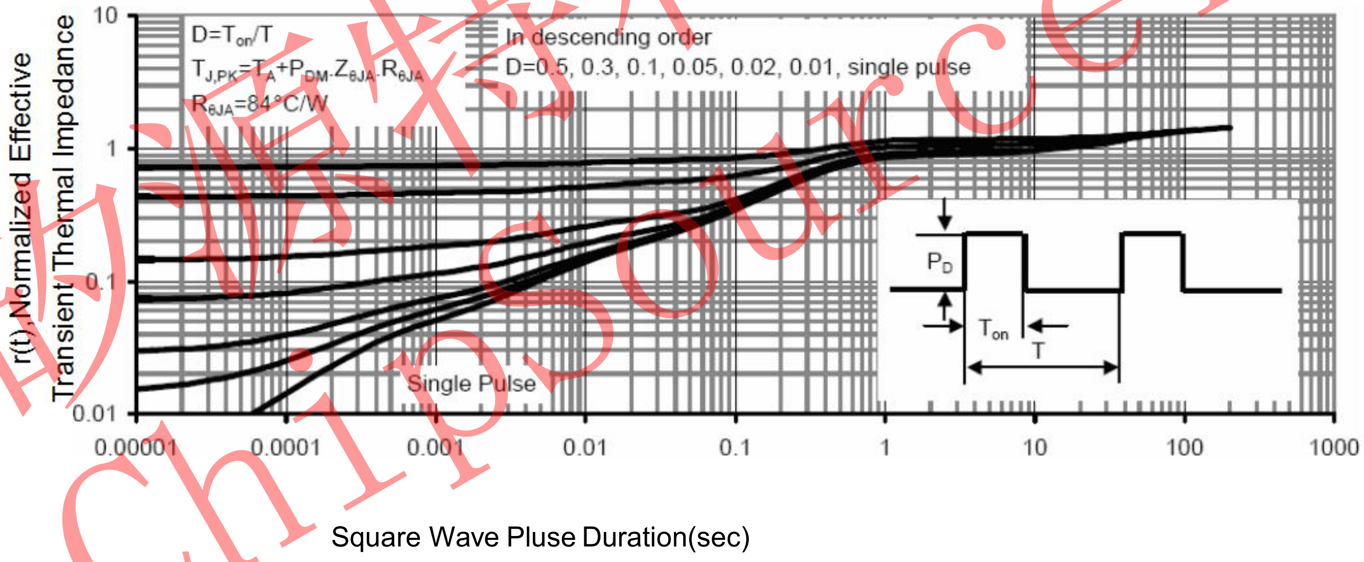
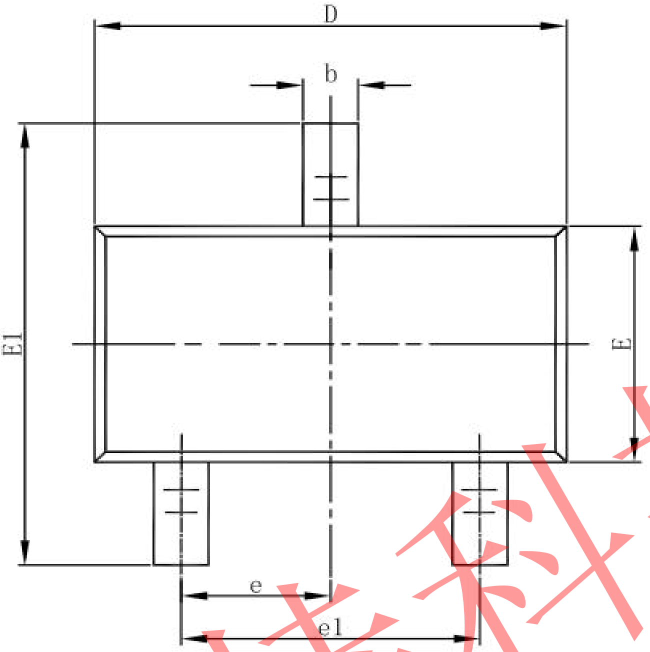
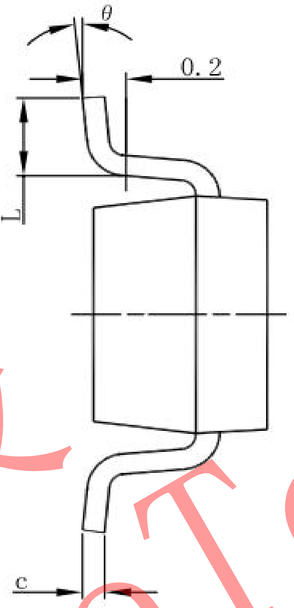
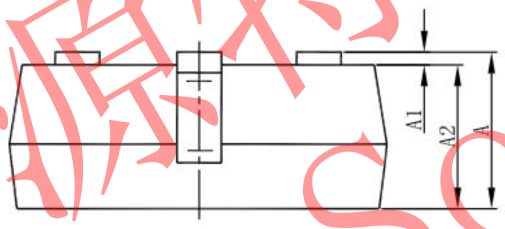


Figure 14 Normalized Maximum Transient Thermal Impedan

SOT-23 PACKAGE INFORMATION







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°