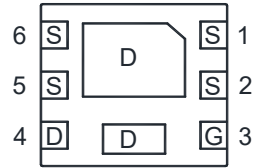
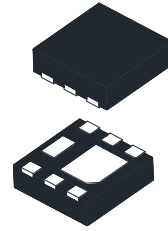
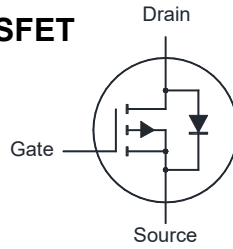


MMX02P023U

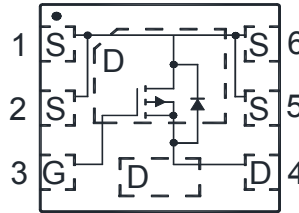
P-Channel Enhancement Mode MOSFET

Features

- Halogen and Antimony Free(HAF),
RoHS compliant



1. Source 2. Source 3. Gate
4. Drain 5. Source 6. Source
DFN2020-6HB Plastic Package



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	Package Limit $-I_D$	20	A
Continuous Drain Current ¹⁾	$-I_D$	9.6	A
Pulsed Drain Current	$t_p = 10 \mu\text{s}$ $-I_{DM}$	48	A
Power Dissipation ¹⁾	P_D	3	W
Thermal Resistance, Junction to Ambient ¹⁾	$R_{\theta JA}$	166	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

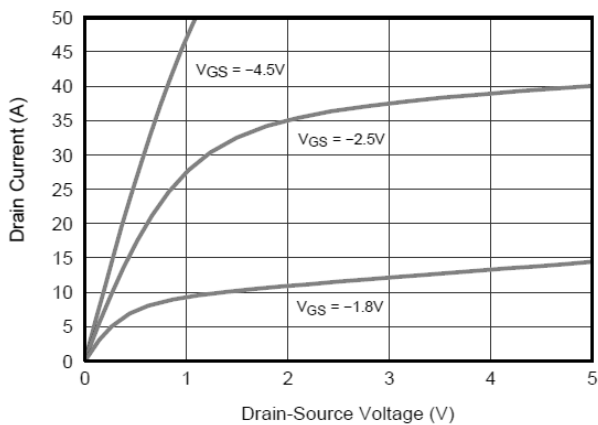
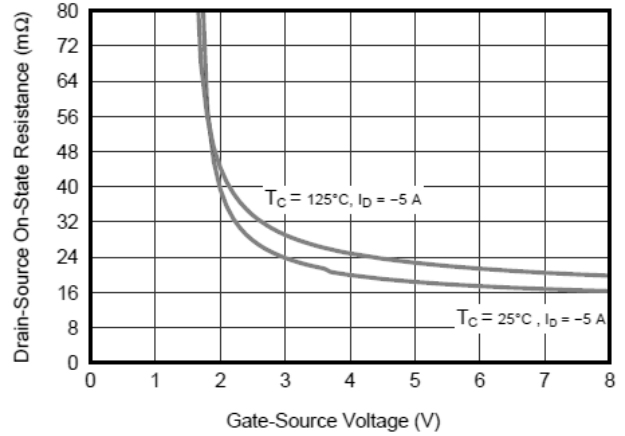
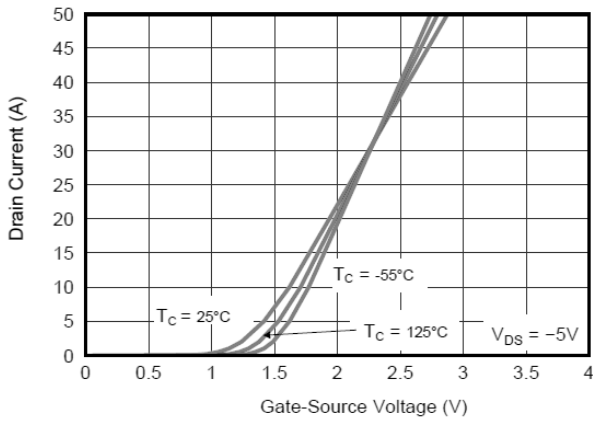
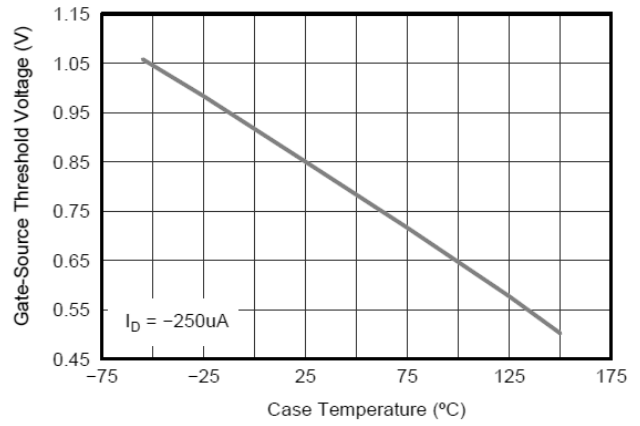
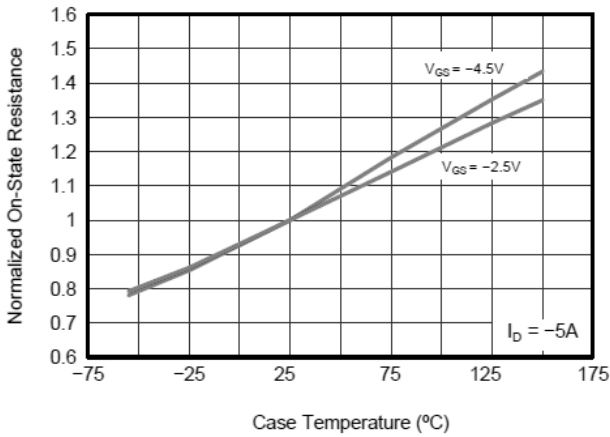
MMX02P023U

Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250 \mu\text{A}$	$-V_{(BR)DSS}$	20	-	-	V
Gate Voltage Drain Current at $-V_{DS} = 16 \text{ V}$	$-I_{DSS}$	-	-	1	μA
Gate-Source Leakage at $V_{GS} = \pm 8 \text{ V}$	$-I_{GSS}$	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $-I_D = 250 \mu\text{A}$	$-V_{GS(th)}$	0.55	-	1.1	V
Drain-Source On-State Resistance at $-V_{GS} = 1.8 \text{ V}$, $-I_D = 5 \text{ A}$ at $-V_{GS} = 2.5 \text{ V}$, $-I_D = 5 \text{ A}$ at $-V_{GS} = 4.5 \text{ V}$, $-I_D = 5 \text{ A}$	$R_{DS(on)}$	-	-	89 32.5 23.9	m Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $-V_{DS} = 16 \text{ V}$, $-I_D = 5 \text{ A}$	g_{FS}	-	34	-	S
Input Capacitance at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{iss}	-	-	655	pF
Output Capacitance at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{oss}	-	-	365	pF
Reverse Transfer Capacitance at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{rss}	-	-	21.7	pF
Total Gate Charge at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$	Q_g	-	-	4.7	nC
Gate-Source Charge at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$	Q_{gs}	-	1.1	-	nC
Gate-Drain Charge at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$	Q_{gd}	-	0.5	-	nC
Turn-On Delay Time at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$, $-V_{GS} = 4.5 \text{ V}$, $R_G = 2 \Omega$	$t_{d(on)}$	-	8	-	ns
Turn-On Rise Time at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$, $-V_{GS} = 4.5 \text{ V}$, $R_G = 2 \Omega$	t_r	-	15	-	ns
Turn-Off Delay Time at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$, $-V_{GS} = 4.5 \text{ V}$, $R_G = 2 \Omega$	$t_{d(off)}$	-	15	-	ns
Turn-Off Fall Time at $-V_{DS} = 10 \text{ V}$, $-I_D = 5 \text{ A}$, $-V_{GS} = 4.5 \text{ V}$, $R_G = 2 \Omega$	t_f	-	5	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $-I_S = 5 \text{ A}$	$-V_{SD}$	-	-	1	V

MMX02P023U

Electrical Characteristics Curves



MMX02P023U

Test Circuits

Fig.1-1 Switching times test circuit

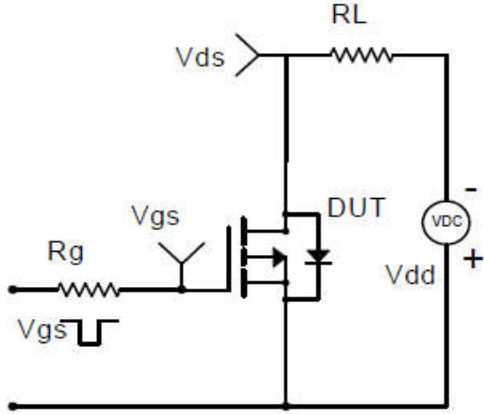


Fig.1-2 Switching Waveform

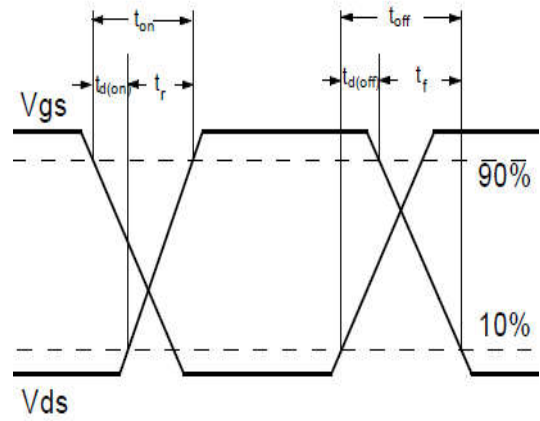


Fig.2-1 Gate charge test circuit

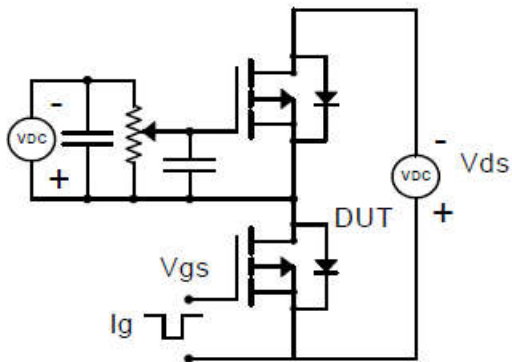


Fig.2-2 Gate charge waveform

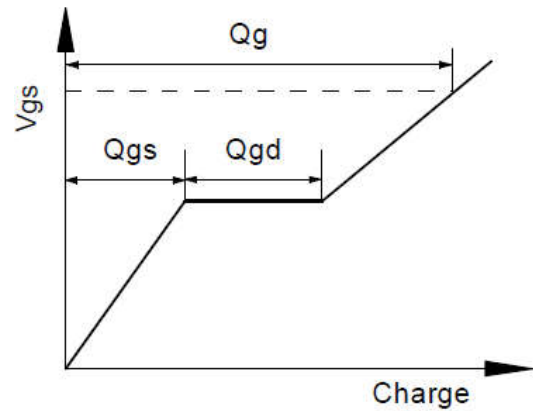


Fig.3-1 Avalanche test circuit

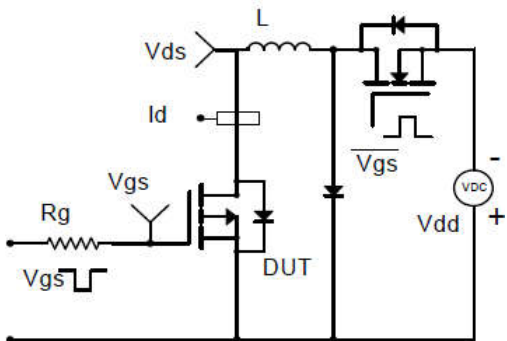
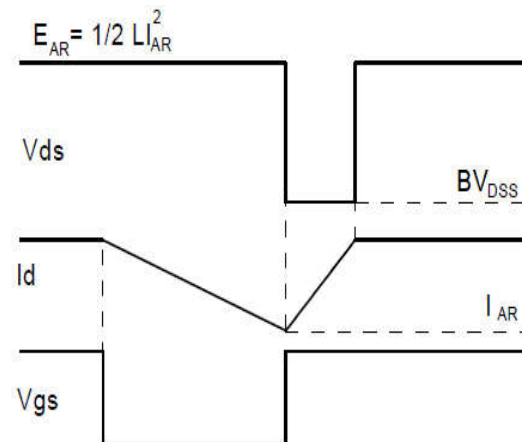
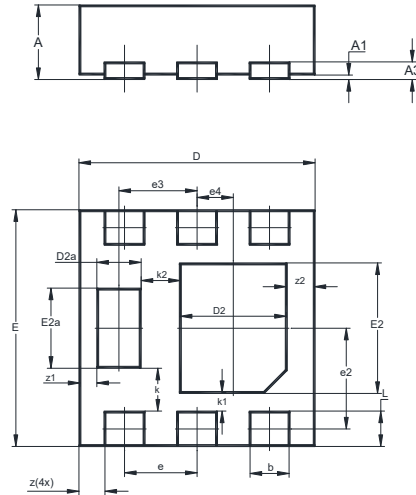


Fig.3-2 Avalanche waveform



MMX02P023U

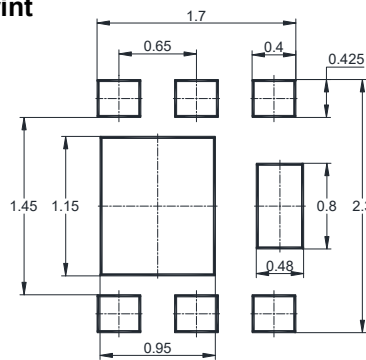
DFN2020-6HB Package Outline Dimensions (Units: mm)



UNIT	A	A1	A3	b	D	D2	D2a	E	E2	E2a	L
mm	0.57 0.63	0 0.05	0.15 Typ.	0.25 0.35	1.95 2.05	0.85 1.05	0.33 0.43	1.95 2.05	1.05 1.25	0.65 0.75	0.225 0.325

UNIT	e	e2	e3	e4	k	k1	k2	z	z1	z2
mm	0.65 BSC	0.863 BSC	0.7 BSC	0.325 BSC	0.37 BSC	0.15 BSC	0.36 BSC	0.2 BSC	0.11 BSC	0.2 BSC

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN2020-6HB	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

- " • " = HAF (Halogen and Antimony Free)
- " MP " = Part No.
- " YYWW " = Date Code Marking
- " Y " = Year (ex: 19 = 2019)
- " W " = Week (ex: 09 = the 9th week of the year)

Font type: Arial

