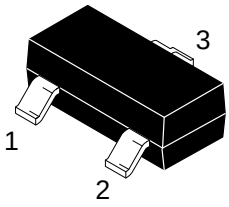
-30V P-Channel Enhancement Mode MOSFET

VDS= -30V
RDS(ON), Vgs@ -10.0V, Ids@-4.2A＜60.0m**Ω**
RDS(ON), Vgs@ -4.5V, Ids@ -4.0A＜ 65.0m**Ω**

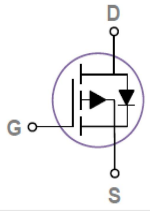


PIN1:G
PIN2:S
PIN3:D

SOT23-3(Top View)

Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- Qualified to AEC-Q101 Standards for High Reliability, HF Product.



Maximum Ratings and Thermal Characteristics (TA = 25oC unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current – Continuous	I_D	-4.2	A
Drain Current- Continuous [A]	I_D(T_a=70℃)	-3.5	A
Pulsed Drain Current [B]	I_{DM}	-30	A
Gate-Source Voltage	V_{GS}	±12	V
Total Power Dissipation [A]	P_D	1.4	W
Total Power Dissipation [A]	P_D(T_a=70℃)	1.0	W
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	℃
Maximum Junction-to-Ambient [A]	$R_{\theta JA}$	125	℃/W
Maximum Junction-to-Lead [C]	$R_{\theta JL}$	60	℃/W

Model	Marking	Package	shipping
M3401MCQ	**QB1H**	**SOT23-3**	**3000/Tape&Reel**

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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
		V_{DS}=-24V V_{GS}=0V T_J=55℃			-5	μA
Gate–Body Leakage.	I_{GSS}	V_{GS}=±12V V_{DS}=0V			±0.1	μA
On–State Drain Current	$I_{D(on)}$	V_{GS}=-4.5V V_{DS}=-5V	-25			A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.7	-1	-1.3	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	V_{GS}=-10V I_D=-4.2A		52	60	mΩ
	$R_{DS(on)(2)}$	V_{GS}=-10V I_D=-4.2A T_J=125℃			75	
	$R_{DS(on)(3)}$	V_{GS}=-4.5V I_D=-4A		60	65	
	$R_{DS(on)(4)}$	V_{GS}=-2.5V I_D=-1A		75	120	
Forward Transconductance	g_{FS}	V_{DS}=-5V I_D=-5A	4	8		S
Drain–Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=-1A		-0.75	-1.0	V
Input Capacitance	C_{iss}	V_{DS}=-15V V_{GS}=0V f=1MHz		957		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V, f=1MHz		6		Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V V_{DS}=-15V I_D=-4A		9.4		nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			3		
Turn–On Delay Time	$t_{d(on)}$	V_{GS}=-10V R_L=3.6Ω V_{DS}=-15V R_{GEN}=6Ω		6.3		ns
Turn–On Rise Time	t_r			3.2		
Turn–Off Delay Time	$t_{d(off)}$			38.2		
Turn–Off Fall Time	t_f			12		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-4A, dI/dt=100A/μs		20.2		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-4A, dI/dt=100A/μs		11.2		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

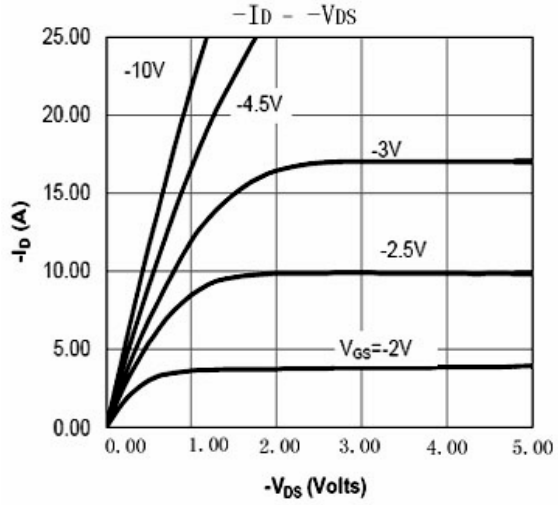
B: Repetitive rating, pulse width limited by junction temperature.

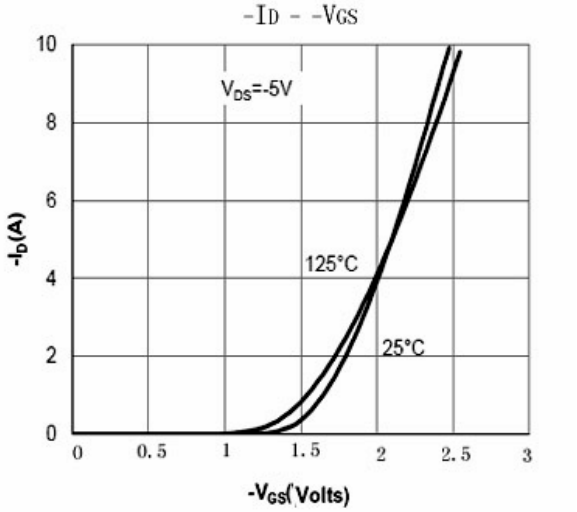
C. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

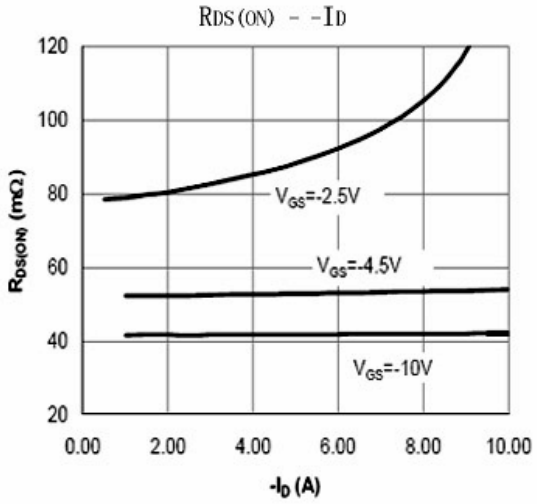
D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

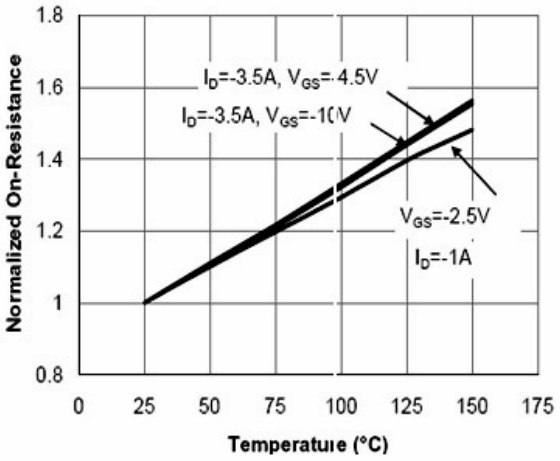
E. These tests are performed with the device mounted on 1 in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

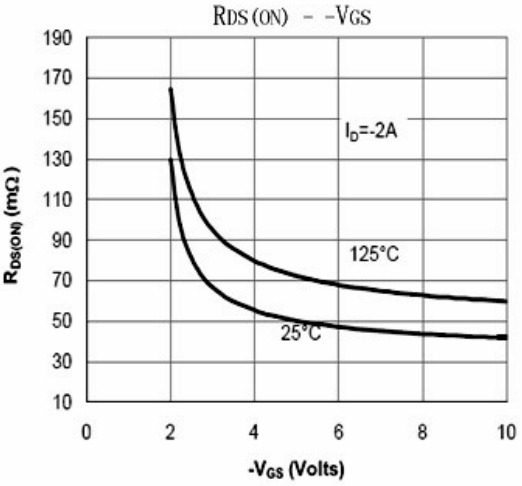
Electrical Characteristic Curve

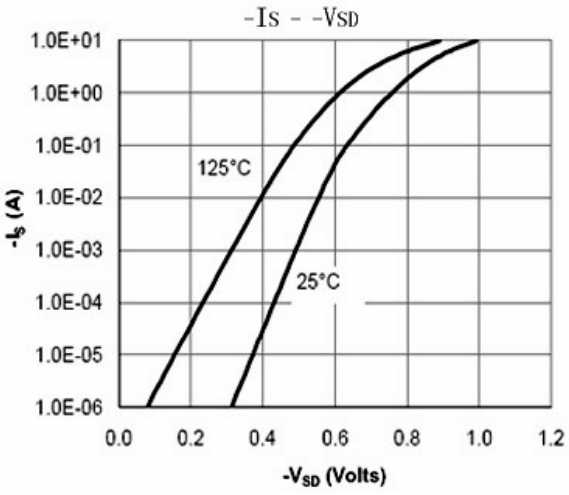




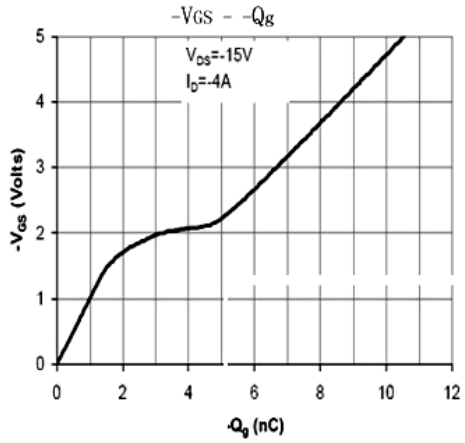


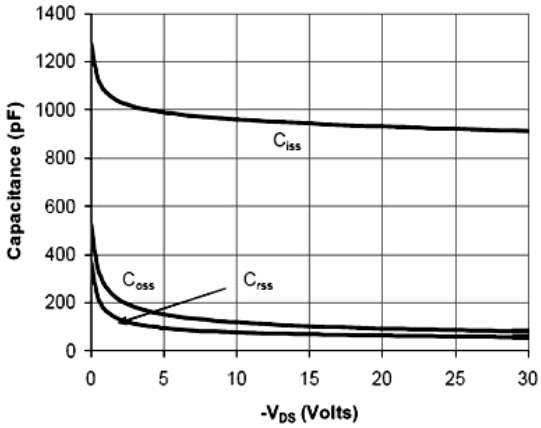


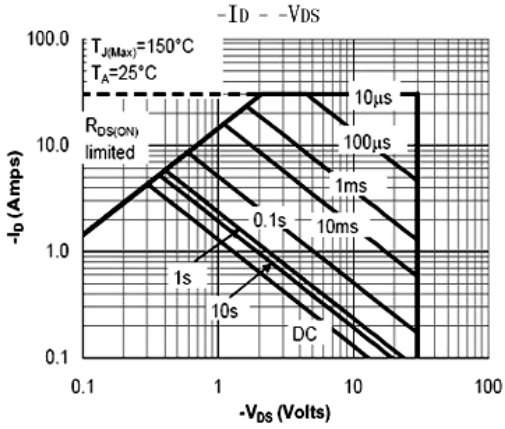




Electrical Characteristic Curve

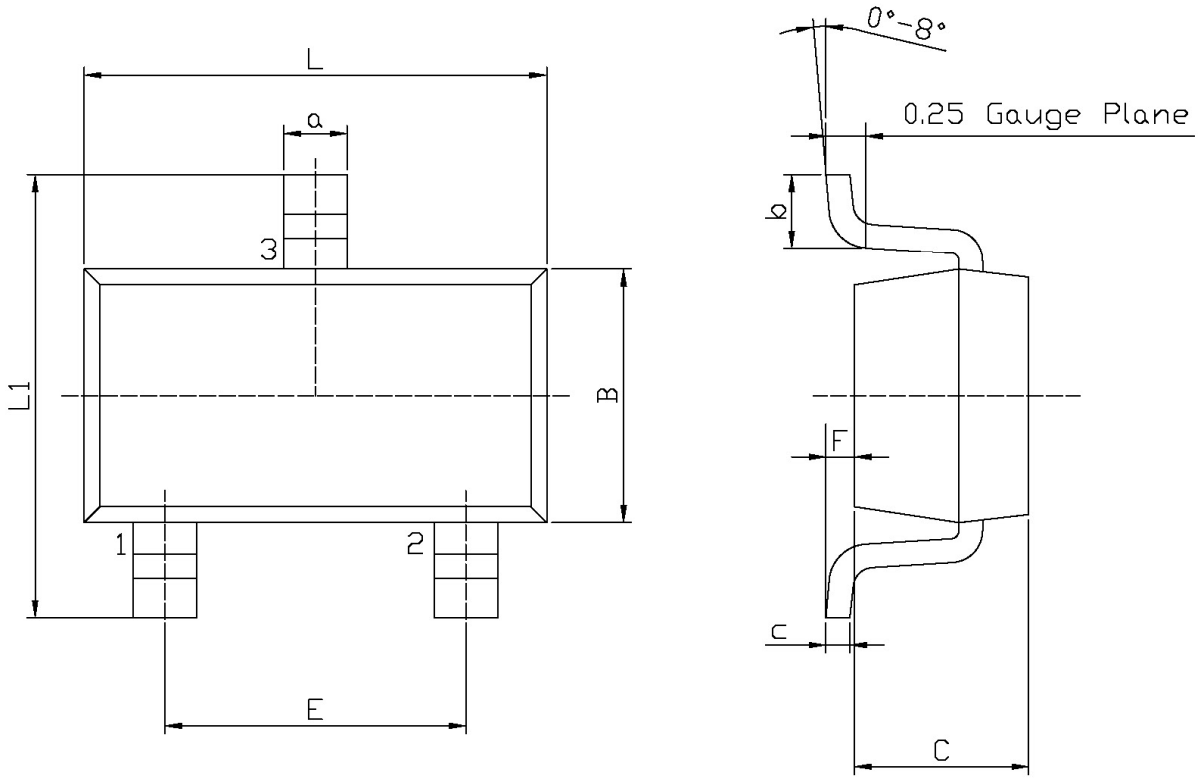






Dimension outline

Unit:mm



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	a	0.35	0.50
B	1.50	1.70	c	0.10	0.20
C	0.90	1.30	b	0.35	0.55
L1	2.60	3.00	F	0	0.15
E	1.80	2.00			

Suggested Pad Layout