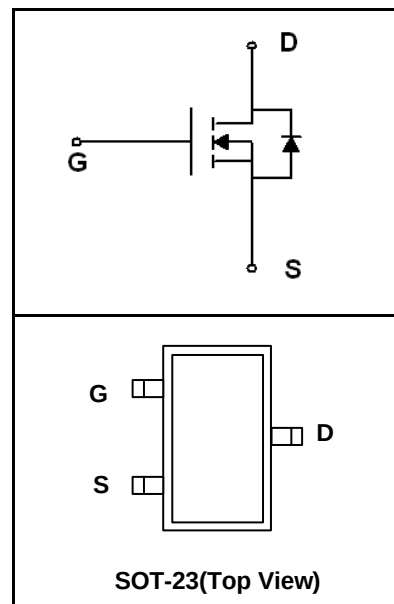


30V N-Channel Enhancement MOSFET

Features

- $V_{DS} = 30V$, $I_D = 3.2A$
- $R_{DS(on)} < 47m\Omega$ @ $V_{GS} = 10V$
- $R_{DS(on)} < 65m\Omega$ @ $V_{GS} = 4.5V$
- Trench LV MOSFET Technology
- SOT-23 Package
- Marking : Making Code
- RoHS Compliant



Applications

- Power Management Switches
- DC/DC Converter

Absolute Maximum Ratings ($T_A = 25^\circ C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	3.2	A
Pulsed Drain Current ¹	I_{DM}	13	A
Total Power Dissipation	P_D	0.75	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ²	$R_{\theta JA}$	166	$^\circ C/W$

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Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30	-	-	V
Gate-body Leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Drain Cut-off Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0	-	-	1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.5	2.0	V
Drain-Source on-Resistance ³	R _{DS(on)}	V _{GS} = 10V, I _D =3.2A	-	32	47	mΩ
		V _{GS} = 4.5V, I _D = 2.8A	-	42	65	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz	-	295	-	pF
Output Capacitance	C _{oss}		-	43	-	
Reverse Transfer Capacitance	C _{rss}		-	34	-	
Switching Characteristics ⁴						
Total Gate Charge	Q _g	V _{GS} = 10V, V _{DS} = 15V, I _D = 3.2A	-	6	-	nC
Gate-Source Charge	Q _{gs}		-	1.6	-	
Gate-Drain Charge	Q _{gd}		-	0.6	-	
Turn-On Time	t _{d(on)}	V _{GS} =10V, V _{DD} = 15V, R _G = 3Ω, I _D = 3.2A	-	7	-	ns
Rise Time	t _r		-	12	-	
Turn-Off Time	t _{d(off)}		-	14	-	
Fall Time	t _f		-	6	-	
Source-Drain Body Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = 1A	-	-	1.2	V
Continuous Source Current	I _S		-	-	3.2	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°C.
2. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
4. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

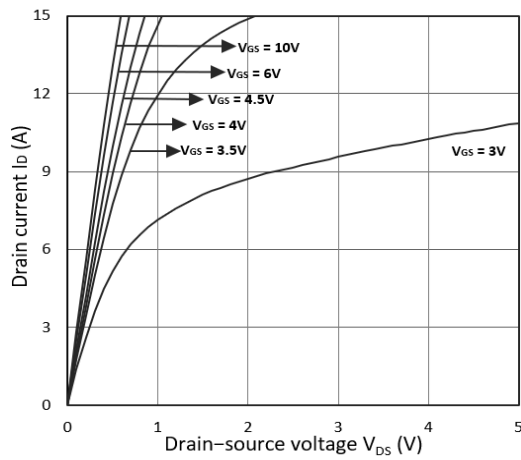


Figure 1. Output Characteristics

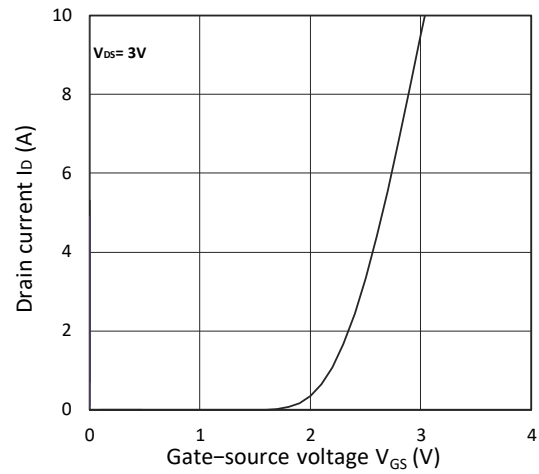


Figure 2. Transfer Characteristics

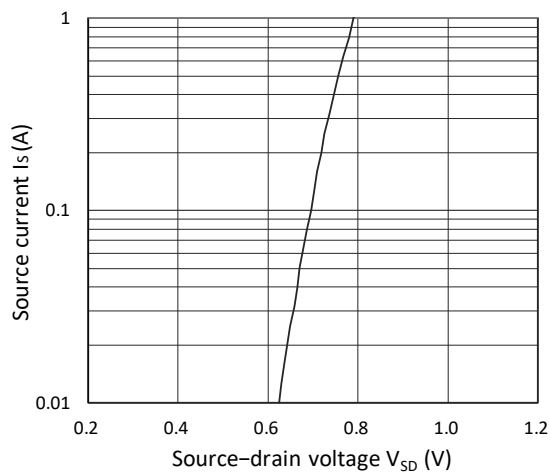


Figure 3. Forward Characteristics of Reverse

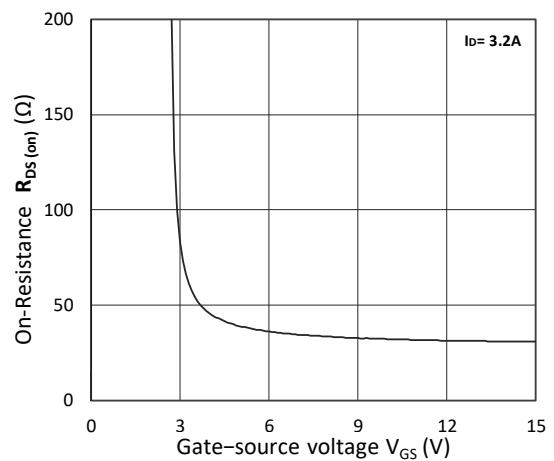


Figure 4. $R_{DS(on)}$ vs. V_{GS}

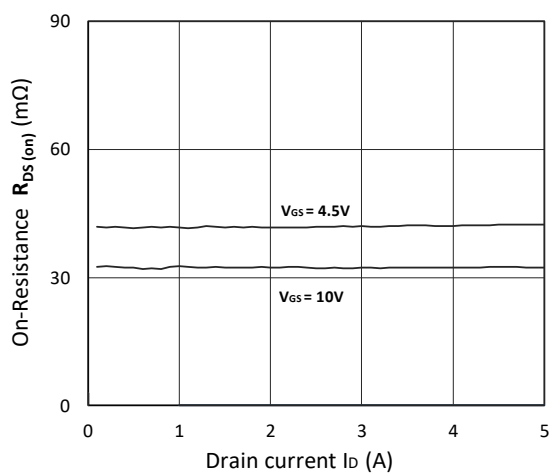


Figure 5. $R_{DS(on)}$ vs. I_D

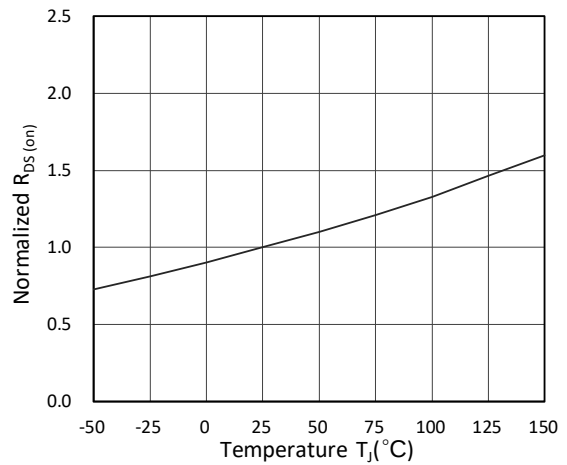


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

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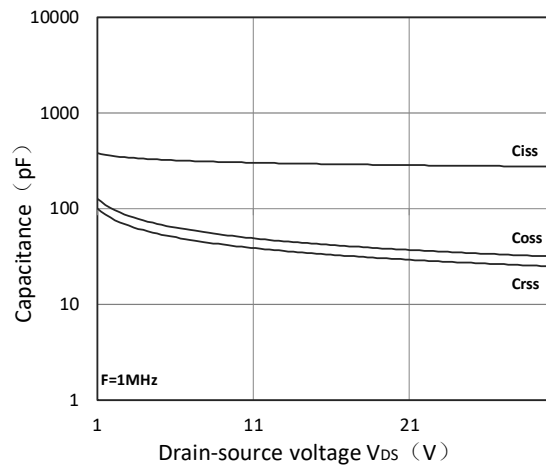


Figure 7. Capacitance Characteristics

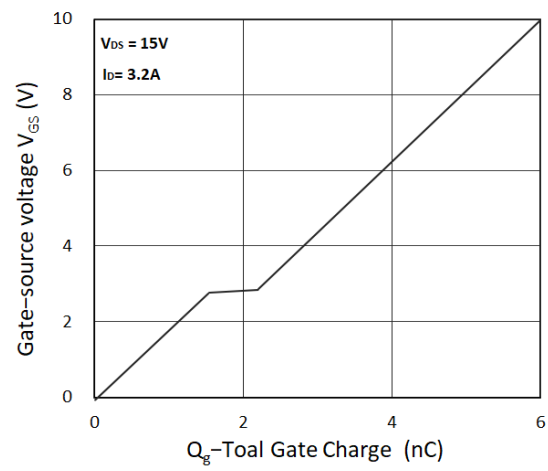
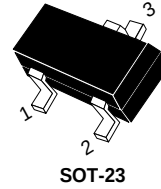
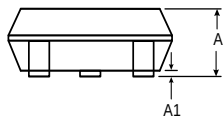
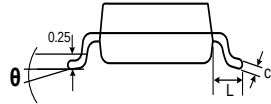
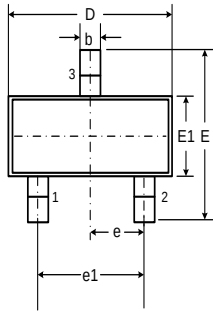


Figure 8. Gate Charge Characteristics

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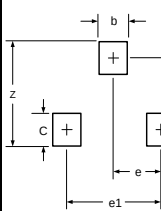
Package Dimension

SOT-23 (Unit: mm)



SOT-23

DIMENSIONS				
SYMBOL	MILLIMETER			
	MIN	MAX	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	2.25	2.55	0.089	0.100
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037BSC	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
θ	0°	8°	0°	8°



DIMENSIONS		
DIM	INCHES	MILLIMETERS
M	0.080	2.02
C	0.032	0.80
Z	0.111	2.82
e	0.037 BSC	0.95 BSC
e1	0.075 BSC	1.90 BSC
b	0.032	0.80

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.

EM03N32M

Ordering Information

Part	Package	Marking	Packing Information
EM03N32M	SOT-23	S6	3k/Reel

Revision History and Checking Table

No.	Version	Date	Revision Item	Request	Function & Spec Checking	Package Checking	Tape Checking
1	1.0	2019-04-19	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying