30V N-Channel Enhancement MOSFET

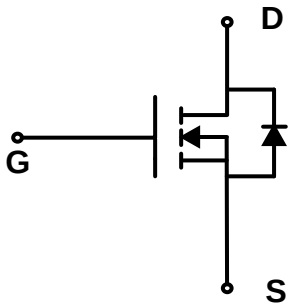
Features

- V_{DS}= 30V, I_D = -5.8A
  $R_{DS(on)}$ < 35mΩ @ V_{GS} =10V
  $R_{DS(on)}$ < 40mΩ @ V_{GS} = 4.5V
  $R_{DS(on)}$ < 52mΩ @ V_{GS} = 2.5V
- Trench Power LV MOSFET Technology

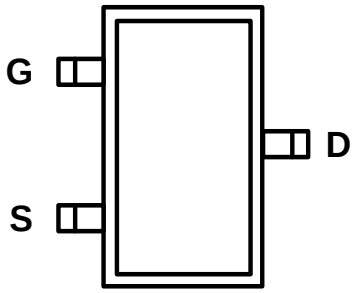
Mechanical Characteristics

- SOT-23 Package
- Marking : Making Code
- RoHS Compliant

Schematic & PIN Configuration



Device Symbol



SOT-23(Top View)

Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_C=25°C	I_D	5.8	A
Pulsed Drain Current [1]		I_{DM}	22	A
Power Dissipation		P_D	1.2	W
Operating Junction and Storage Temperature Range		T_J ,T_{STG}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	104	°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	30	-	-	V
Gate-body Leakage current	I_{DSS}	V_{GS} = 30V, V_{DS} = 0V	-	-	1	uA
Gate-body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}= 0V, I_D = 250μA	0.7	-	1.4	V
Drain-Source on-state Resistance (3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 5.8A	-	23	35	mΩ
		V_{GS} = 4.5V, I_D = 5A	-	26	40	
		V_{GS} = 2.5V, I_D = 4A	-	40	52	
Dynamic Characteristics (4)						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	-	560	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	50	-	
Switching Characteristics (4)						
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 4.5V, I_D = 5.8A	-	7.5	-	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	
Gate-Drain Charge	Q_{gd}		-	2.1	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 15V, V_{GS} = 10V, R_{GEN} = 3Ω, R_L = 2.7Ω	-	5	-	ns
Turn-on Rise Time	t_r			7		
Turn-off Delay Time	$t_{d(off)}$		-	40	-	
Turn- off Fall Time	t_f		-	6	-	
Source-Drain Body Diode Characteristics						
Body Diode Voltage (3)	V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1.3	V
Continuous Source Current	I_S		-	-	5.8	A

Note1：Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C

Note2：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.

Note3：Pulse Test: Pulse width≤300μs, duty cycle≤2%

Note4：This value is guaranteed by design hence it is not included in the production test

Typical Characteristics

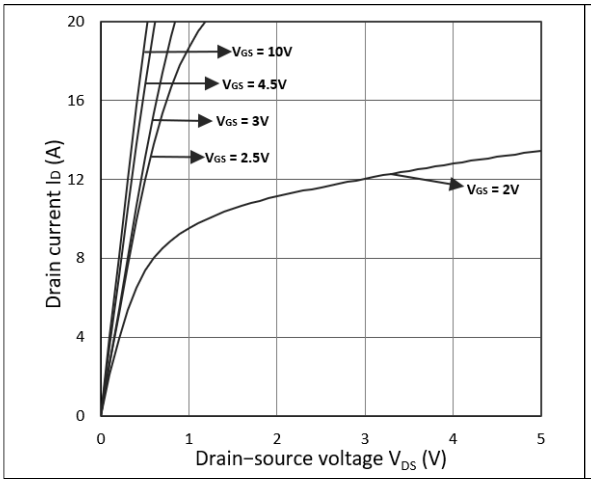


Figure 1. Output Characteristics

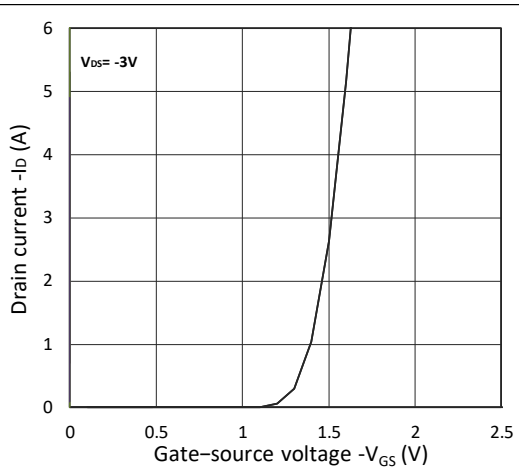


Figure 2. Transfer Characteristics

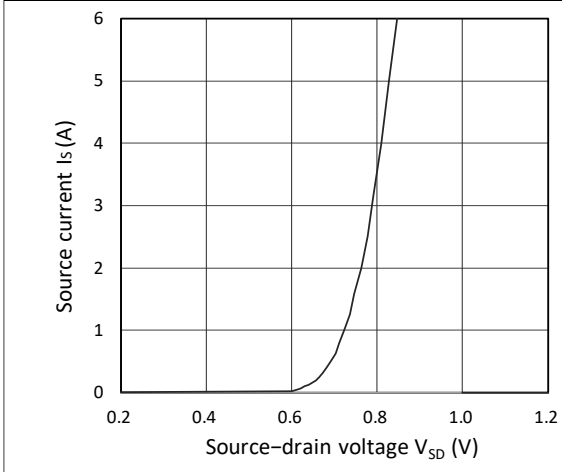


Figure 3. Forward Characteristics of Reverse

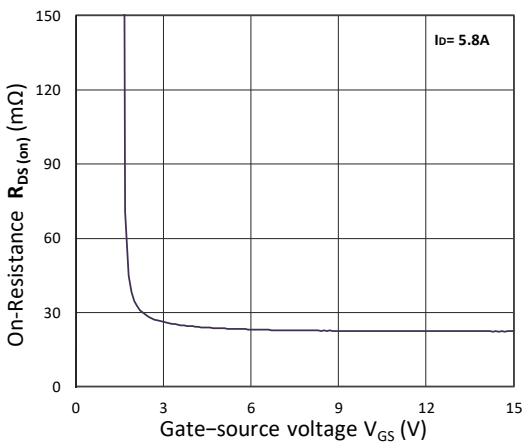


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

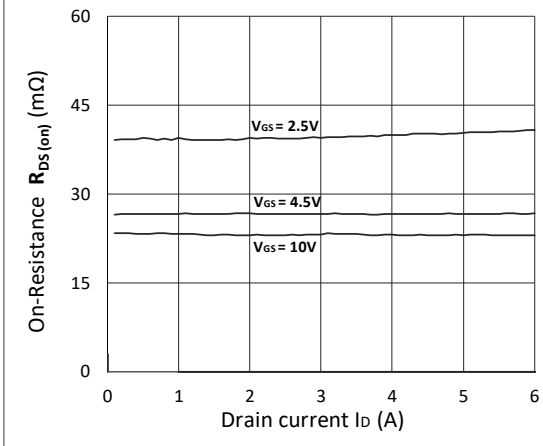


Figure 5. $R_{DS(ON)}$ vs. I_D

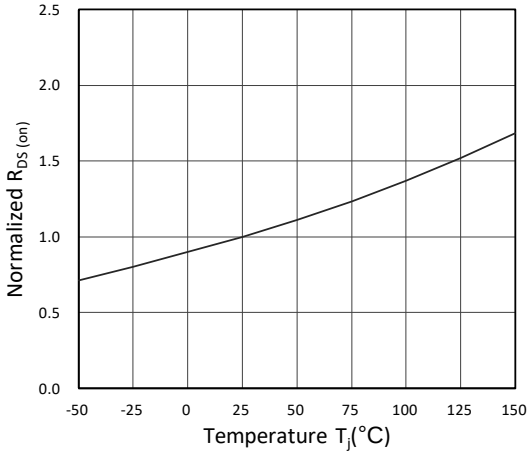


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics(Continued)

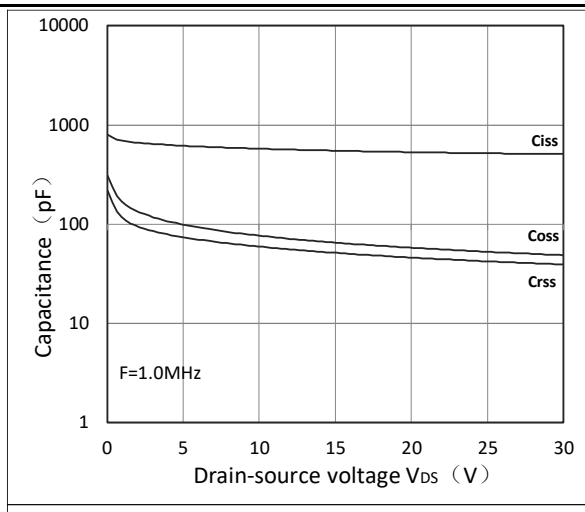


Figure 7. Capacitance Characteristics

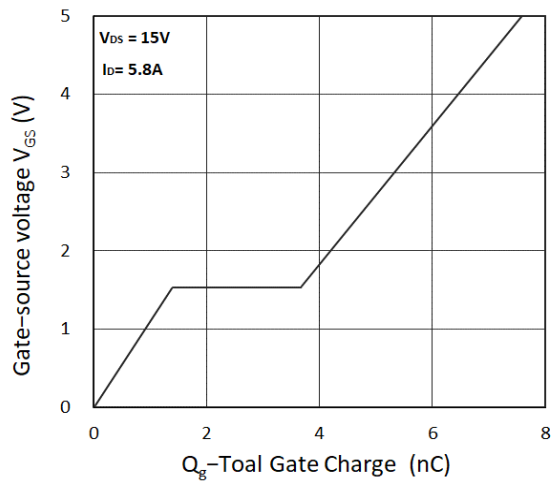
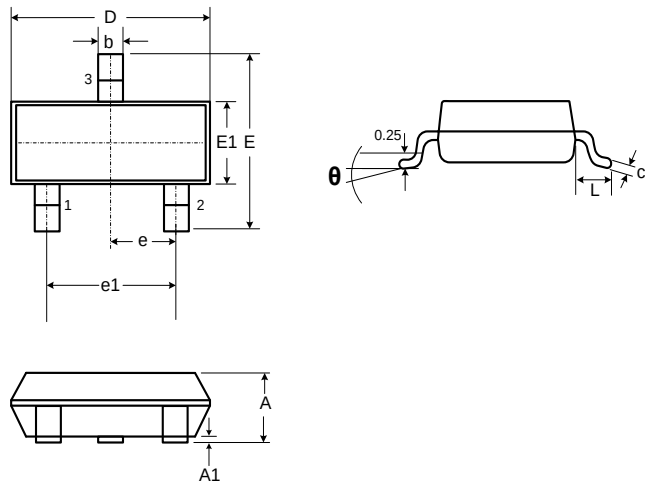


Figure 8. Gate Charge Characteristics

Package Dimension

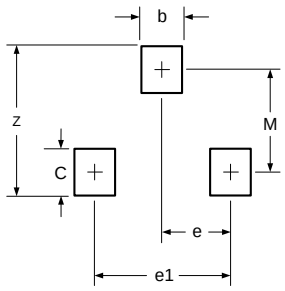
SOT-23

PACKAGE OUTLINE



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.90	1.15
A1	0.00	0.10
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	2.25	2.55
E1	1.20	1.40
e	0.95 REF	
e1	1.80	2.00
L	0.55 REF	
θ	0°	8°

Land Pattern



DIMENSIONS	
DIM	MILLIMETERS
M	2.02
C	0.80
Z	2.82
e	0.95
e1	1.90
b	0.80

Ordering Information

Part	Package	Marking	Packing Information
EM03N58M	SOT-23	3400	3k/Reel

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2018-09-13	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying