

## FEATURES

- |  $V_{DS} = 30V, I_D = 5.6A$

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- |  $R_{DS(ON)} < 27\ m\Omega @ V_{GS} = 10V$

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- |  $R_{DS(ON)} < 30m\Omega @ V_{GS} = 4.5V$

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- |  $R_{DS(ON)} < 45m\Omega @ V_{GS} = 2.5V$

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- | Trench Power LV MOSFET technology

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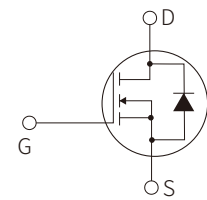
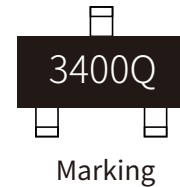
- | High density cell design for low  $R_{DS(ON)}$

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- | High Speed switching

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- | Meet AEC-Q101 Requirements



Schematic Symbol

## APPLICATION

- | Battery protection

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- | Load switch

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- | Power management

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate Threshold Voltage	$V_{GSS}$	$\pm 12$	V
Drain Current - Continuous ( $T_A = 25^\circ C$ )	$I_D$	5.6	A
Drain Current - Continuous ( $T_A = 70^\circ C$ )		4.5	
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	23	A
Power Dissipation ( $T_A = 25^\circ C$ )	$P_D$	1.2	W
Power Dissipation ( $T_A = 70^\circ C$ )		0.8	
Thermal Resistance Junction- to- Ambient <sup>B</sup>	$R_{\theta JA}$	104	$^\circ C/W$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

## ELECTRICAL CHARACTERISTICS (Ta=25°C )

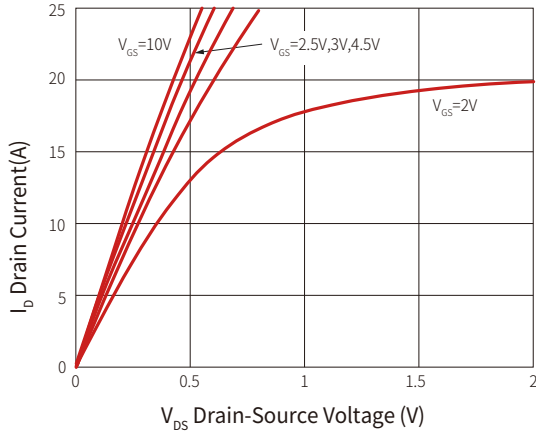
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.9	1.3	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$		19	27	m $\Omega$
		$V_{GS}=4.5V, I_D=3.0A$		20	30	m $\Omega$
		$V_{GS}=2.5V, I_D=2.5A$		28	45	m $\Omega$
Diode Forward Voltage	$V_{SD}$	$I_S=5.6A, V_{GS}=0V$			1.2	V
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		630		pF
Output Capacitance	$C_{oss}$			55		pF
Reverse Transfer Capacitance	$C_{rss}$			71		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V, R_{GEN}=3\Omega$ $I_D=5.6A$		4.4		ns
Turn-on Rise Time	$t_r$			28.2		ns
Turn-Off Delay Time	$t_{d(off)}$			16.2		ns
Turn-off Fall Time	$t_f$			26		ns
Total Gate Charge	$Q_g$				17.25	
Gate-Source Charge	$Q_{gs}$	$V_{DS}=15V, I_D=5.6A$ $V_{GS}=10V$		2.1		nC
Gate-Drain Charge	$Q_{gd}$			2		nC
Reverse Recovery Charge	$Q_{rr}$		$I_F=5.6A, di/dt=100A/\mu s$		1.1	
Reverse Recovery Time	$t_{rr}$			13.1		ns

A. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

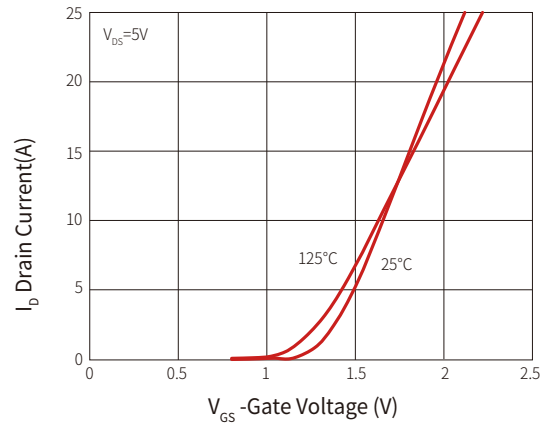
B.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JC}$  is guaranteed by design, while  $R_{\theta JA}$  is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

# PARAMETER CHARACTERISTIC CURVE

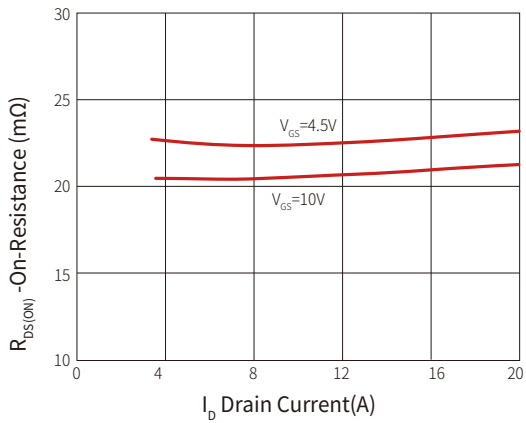
**Fig 1: Output Characteristics**



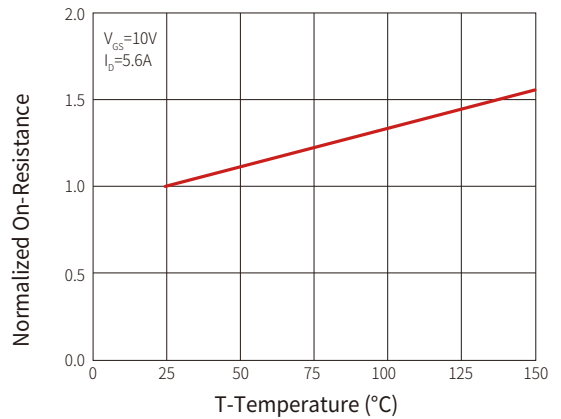
**Figure 2: Transfer Characteristics**



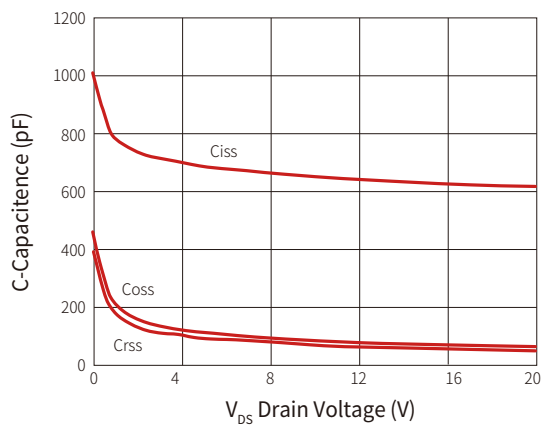
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



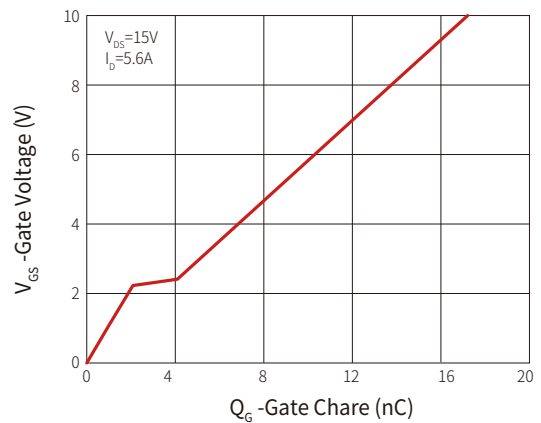
**Figure 4: On-Resistance vs. Junction Temperature**



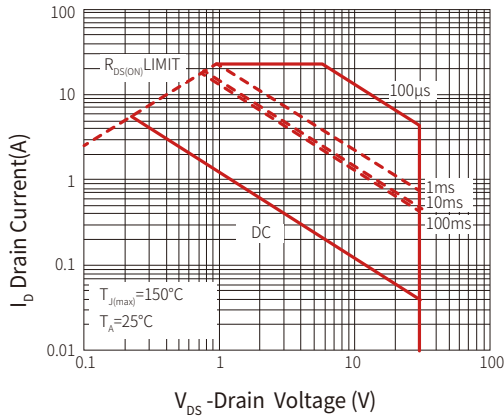
**Figure 5: Capacitance Characteristics**



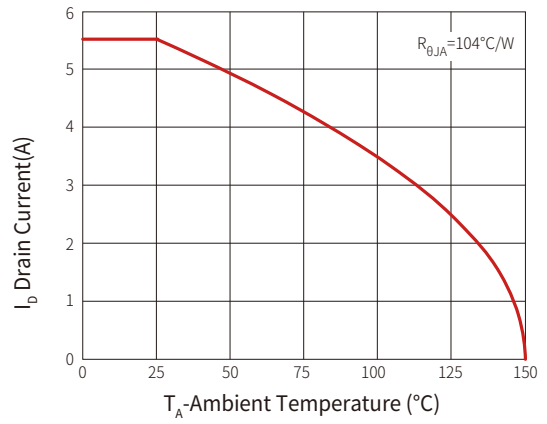
**Figure 6: Gate Charge**



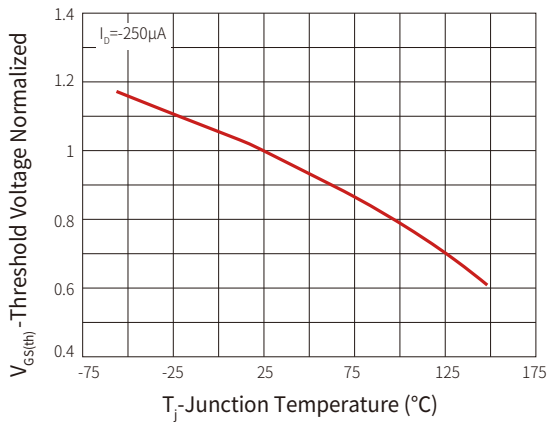
**Figure 7: Safe Operation Area**



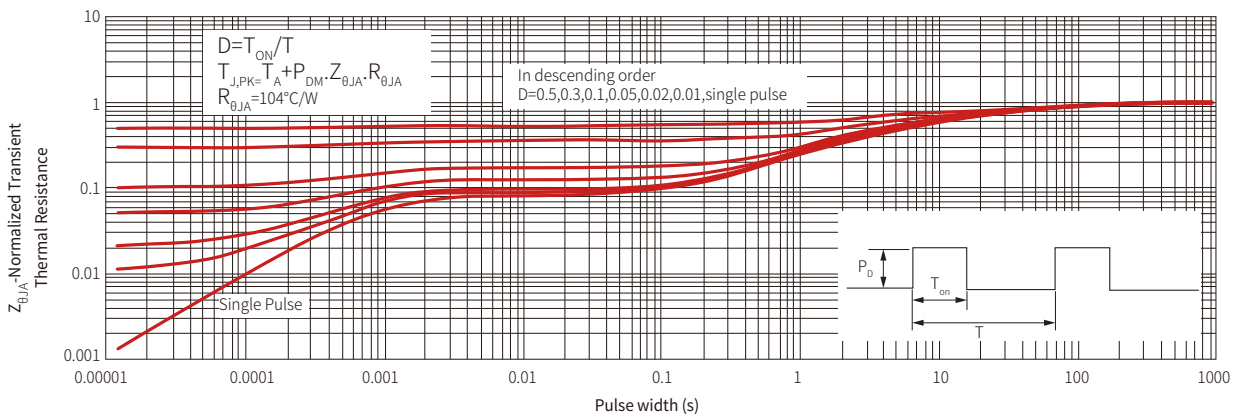
**Figure 8: Maximum Continuous Drain Current vs Ambient Temperature**



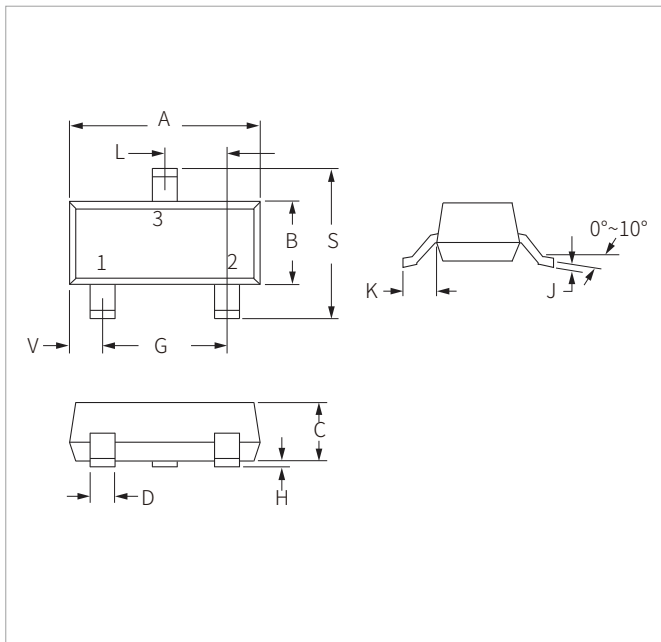
**Figure 9: Normalized Threshold voltage**



**Figure 10: Normalized Maximum Transient Thermal Impedance**

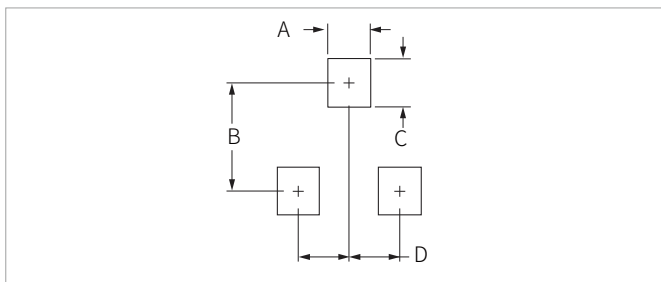


## SOT-23-3L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.15	0.110	0.124
B	1.50	1.70	0.060	0.070
C	1.00	1.30	0.039	0.051
D	0.37	0.50	0.015	0.020
G	1.78	2.10	0.070	0.083
H	0.01	0.15	0.001	0.006
J	0.08	0.18	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.60	3.00	0.102	0.118
V	0.45	0.60	0.018	0.024

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
B	2.30	2.50	0.090	0.098
C	0.70	1.00	0.028	0.039
D	0.80	1.10	0.032	0.043

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM3400AQ	SOT-23-3L	3000PCS	7"

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