



Automotive N-Channel 40 V (D-S) 175 °C MOSFET

PRODUCT SUMMARY	
V_{DS} (V)	40
$R_{DS(on)}$ (Ω) at $V_{GS} = 10$ V	0.032
$R_{DS(on)}$ (Ω) at $V_{GS} = 4.5$ V	0.042
I_D (A)	8
Configuration	Single

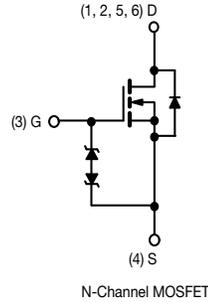
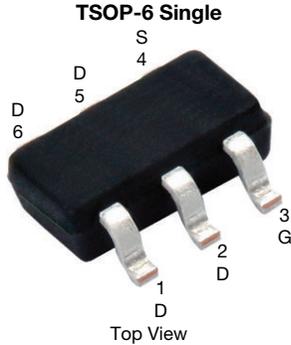
FEATURES

- TrenchFET® power MOSFET
- Typical ESD protection 800 V
- AEC-Q101 qualified
- 100 % Rg and UIS tested
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE



RoHS COMPLIANT
HALOGEN FREE



Marking Code: 8M

ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free and Halogen-free	SQ3418AEEV-T1-GE3

ABSOLUTE MAXIMUM RATINGS ($T_C = 25$ °C, unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	$T_C = 25$ °C ^a	8
		$T_C = 125$ °C	5
Continuous Source Current (Diode Conduction)	I_S	6	A
Pulsed Drain Current ^b	I_{DM}	32	
Single Pulse Avalanche Current	I_{AS}	5	
Single Pulse Avalanche Energy	E_{AS}	1.2	mJ
Maximum Power Dissipation ^b	P_D	$T_C = 25$ °C	
		$T_C = 125$ °C	1.6
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +175	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Ambient	R_{thJA}	110	°C/W
Junction-to-Foot (Drain)	R_{thJF}	30	

Notes

- Package limited.
- Pulse test; pulse width ≤ 300 μ s, duty cycle ≤ 2 %.
- When mounted on 1" square PCB (Fr-4 material).
- Parametric verification ongoing.



SPECIFICATIONS (T _C = 25 °C, unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0, I _D = 250 μA		40	-	-	V
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		1.5	2.0	2.5	
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V		-	-	± 500	nA
		V _{DS} = 0 V, V _{GS} = ± 20 V		-	-	± 1	mA
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0 V	V _{DS} = 40 V	-	-	1	μA
		V _{GS} = 0 V	V _{DS} = 40 V, T _J = 125 °C	-	-	50	
		V _{GS} = 0 V	V _{DS} = 40 V, T _J = 175 °C	-	-	150	
On-State Drain Current ^a	I _{D(on)}	V _{GS} = 10 V	V _{DS} ≥ 5 V	10	-	-	A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V	I _D = 5 A	-	0.026	0.032	Ω
		V _{GS} = 10 V	I _D = 5 A, T _J = 125 °C	-	-	0.050	
		V _{GS} = 10 V	I _D = 5 A, T _J = 175 °C	-	-	0.061	
		V _{GS} = 4.5 V	I _D = 4 A	-	0.032	0.042	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 4 A		-	13	-	S
Dynamic ^b							
Input Capacitance	C _{iss}	V _{GS} = 0 V	V _{DS} = 25 V, f = 1 MHz	-	528	-	pF
Output Capacitance	C _{oss}			-	112	-	
Reverse Transfer Capacitance	C _{rss}			-	76	-	
Total Gate Charge ^c	Q _g	V _{GS} = 4.5 V	V _{DS} = 20 V, I _D = 4 A	-	3.5	-	nC
Gate-Source Charge ^c	Q _{gs}			-	1.3	-	
Gate-Drain Charge ^c	Q _{gd}			-	1.2	-	
Gate Resistance	R _g	f = 1 MHz		-	2.3	-	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 20 V, R _L = 4 Ω I _D ≅ 5 A, V _{GEN} = 10 V, R _g = 1 Ω		-	8	-	ns
Rise Time ^c	t _r			-	8	-	
Turn-Off Delay Time ^c	t _{d(off)}			-	15	-	
Fall Time ^c	t _f			-	7	-	
Source-Drain Diode Ratings and Characteristics T_C = 25 °C ^b							
Pulsed Current ^a	I _{SM}			-	-	32	A
Forward Voltage	V _{SD}	I _F = 3 A, V _{GS} = 0		-	0.8	1.2	V

Notes

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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