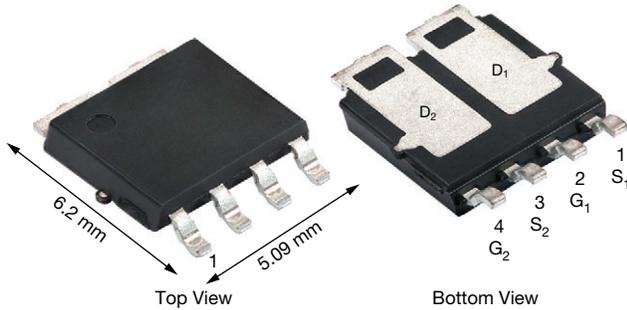
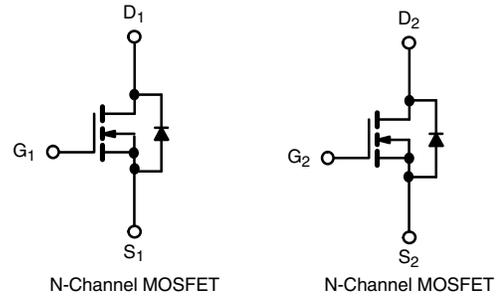


Automotive Dual N-Channel 60 V (D-S) 175 °C MOSFET

PowerPAK® SO-8L Dual BWL

FEATURES

- TrenchFET® Gen IV power MOSFET
- AEC-Q101 qualified
- 100 % R_G and UIS tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE


RoHS
 COMPLIANT
 HALOGEN
FREE


PRODUCT SUMMARY	
V _{DS} (V)	60
R _{DS(on)} (Ω) at V _{GS} = 10 V	0.0046
I _D (A) per leg ^e	100
Configuration	Dual

ORDERING INFORMATION	
Package	PowerPAK® SO-8L
Lead (Pb)-free and halogen-free	SQJ766EP (for detailed order number please see www.vishay.com/doc?79771)

ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)				
PARAMETER	SYMBOL	LIMIT	UNIT	
Drain-source voltage	V _{DS}	60	V	
Gate-source voltage	V _{GS}	± 20		
Continuous drain current ^e	I _D	T _C = 25 °C ^a	A	
		T _C = 125 °C		
Continuous source current (diode conduction)	I _S	85	A	
Pulsed drain current ^{b, e}	I _{DM}	280		
Single pulse avalanche current	I _{AS}	L = 0.1 mH	mJ	
Single pulse avalanche energy				
Maximum power dissipation ^b	P _D	T _C = 25 °C	W	
		T _C = 125 °C		
Operating junction and storage temperature range	T _J , T _{stg}	-55 to +175	°C	
Soldering recommendations (peak temperature) ^{d, e}		260		

THERMAL RESISTANCE RATINGS				
PARAMETER	SYMBOL	LIMIT	UNIT	
Junction-to-ambient	R _{thJA}	42	°C/W	
Junction-to-case (drain) ^d	R _{thJC}	1.6		

Notes

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
- When mounted on 1" square PCB (FR4 material)
- See solder profile (www.vishay.com/doc?73257).
- As per on JESD51-14
- Values based on R_{thJC} and T_C of 25 °C. Actual values achievable will be dependent on the thermal characteristics of the complete system



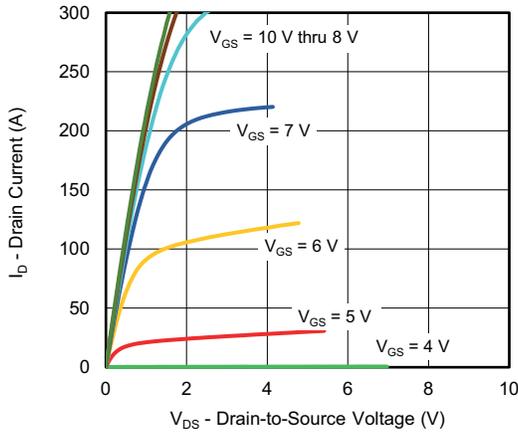
SPECIFICATIONS ($T_C = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	60	-	-	V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2.5	3.0	3.5	
Gate-source leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 60\text{ V}$	-	-	1	μA
		$V_{GS} = 0\text{ V}$ $V_{DS} = 60\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	-	50	
		$V_{GS} = 0\text{ V}$ $V_{DS} = 60\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	-	200	
On-state drain current ^a	$I_{D(on)}$	$V_{GS} = 10\text{ V}$ $V_{DS} \geq 5\text{ V}$	10	-	-	A
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ $I_D = 7\text{ A}$	-	0.00384	0.00460	Ω
		$V_{GS} = 10\text{ V}$ $I_D = 7\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	-	0.00723	
		$V_{GS} = 10\text{ V}$ $I_D = 7\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	-	0.00872	
Forward transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 10\text{ A}$	-	37	-	S
Dynamic ^b						
Input capacitance	C_{iss}	$V_{GS} = 0\text{ V}$ $V_{DS} = 30\text{ V}, f = 1\text{ MHz}$	-	2367	3600	μF
Output capacitance	C_{oss}		-	747	1150	
Reverse transfer capacitance	C_{rss}		-	36	72	
Total gate charge ^c	Q_g	$V_{GS} = 10\text{ V}$ $V_{DS} = 30\text{ V}, I_D = 5\text{ A}$	-	33.6	55	nC
Gate-source charge ^c	Q_{gs}		-	10	-	
Gate-drain charge ^c	Q_{gd}		-	6.6	-	
Gate resistance	R_g	$f = 1\text{ MHz}$	0.5	1.1	1.7	Ω
Turn-on delay time ^c	$t_{d(on)}$	$V_{DD} = 30\text{ V}, R_L = 6\text{ }\Omega$ $I_D \cong 5\text{ A}, V_{GEN} = 10\text{ V}, R_g = 1\text{ }\Omega$	-	14	25	ns
Rise time ^c	t_r		-	5	10	
Turn-off delay time ^c	$t_{d(off)}$		-	24	40	
Fall time ^c	t_f		-	8	15	
Source-drain diode ratings and characteristics ^b						
Pulsed current ^a	I_{SM}		-	-	280	A
Forward voltage	V_{SD}	$I_F = 7\text{ A}, V_{GS} = 0\text{ V}$	-	0.78	1.1	V
Body diode reverse recovery time	t_{rr}	$I_F = 7\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$	-	44	90	ns
Body diode reverse recovery charge	Q_{rr}		-	38	80	nC
Reverse recovery fall time	t_a		-	21	-	ns
Reverse recovery rise time	t_b		-	23	-	
Body diode peak reverse recovery current	$I_{RM(REC)}$			-	-1.45	-

Notes

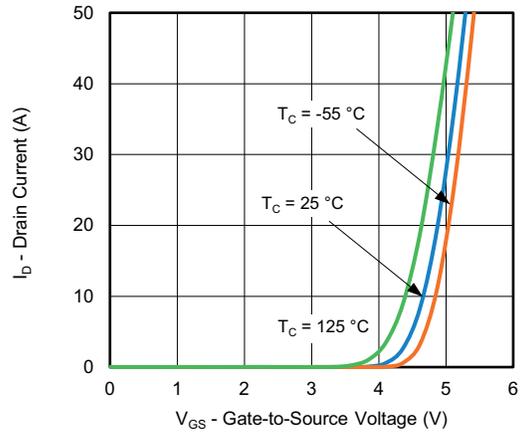
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- b. Guaranteed by design, not subject to production testing
- c. Independent of operating temperature

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.

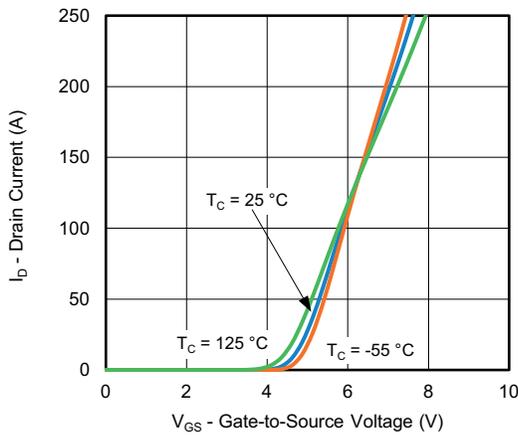
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



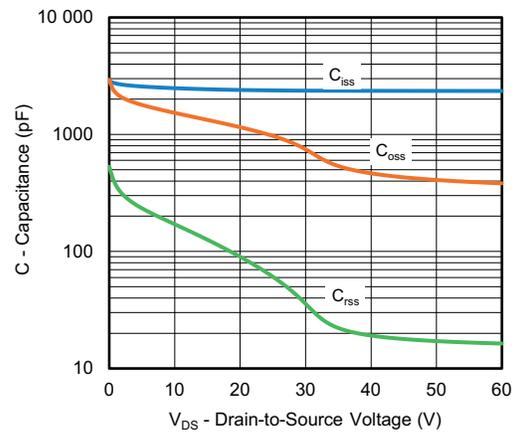
Output Characteristics



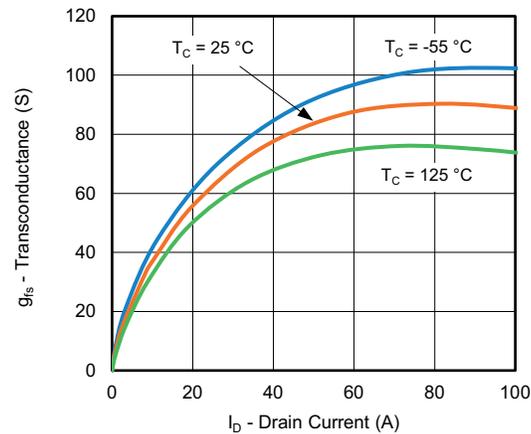
Transfer Characteristics



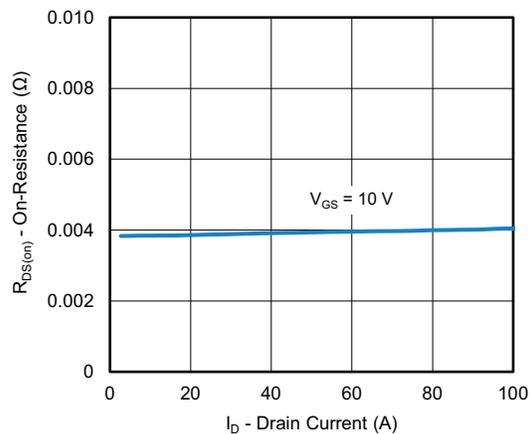
Transfer Characteristics



Capacitance

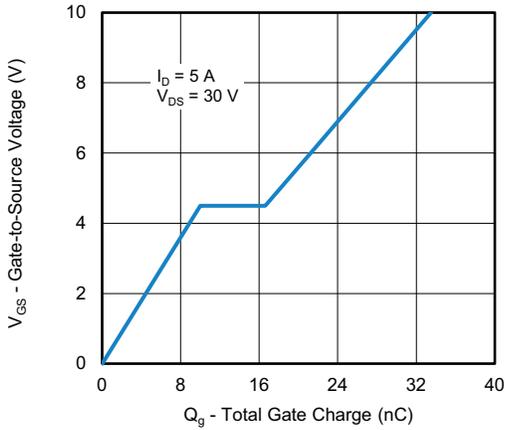


Transconductance

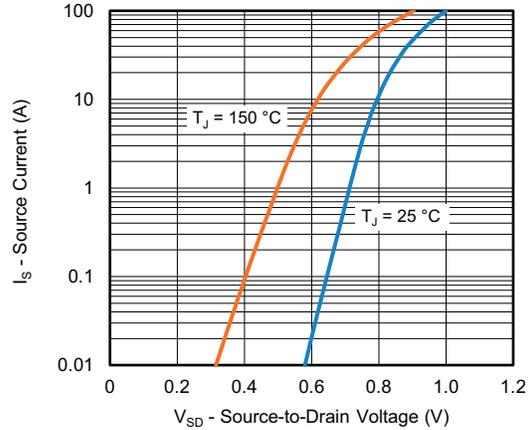


On-Resistance vs. Drain Current

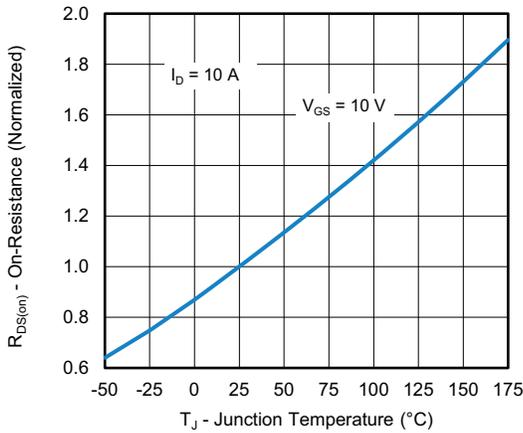
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



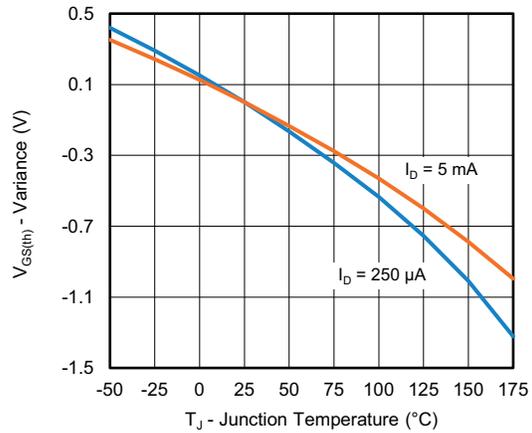
Gate Charge



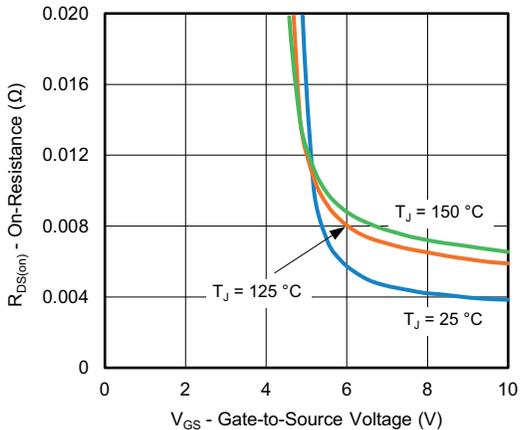
Source Drain Diode Forward Voltage



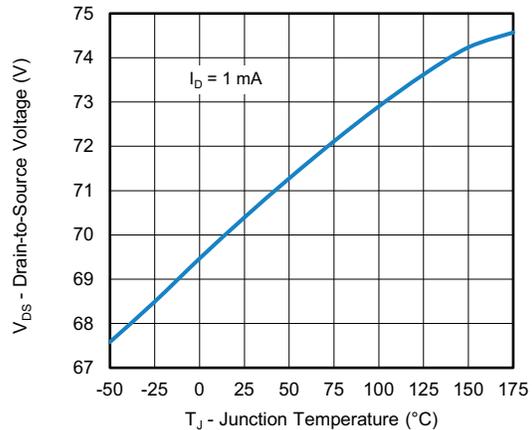
On-Resistance vs. Junction Temperature



Threshold Voltage



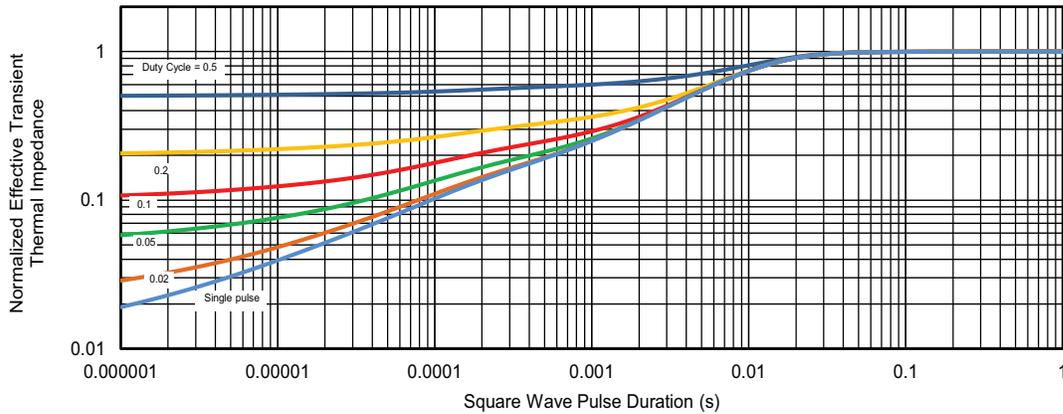
On-Resistance vs. Gate-to-Source Voltage



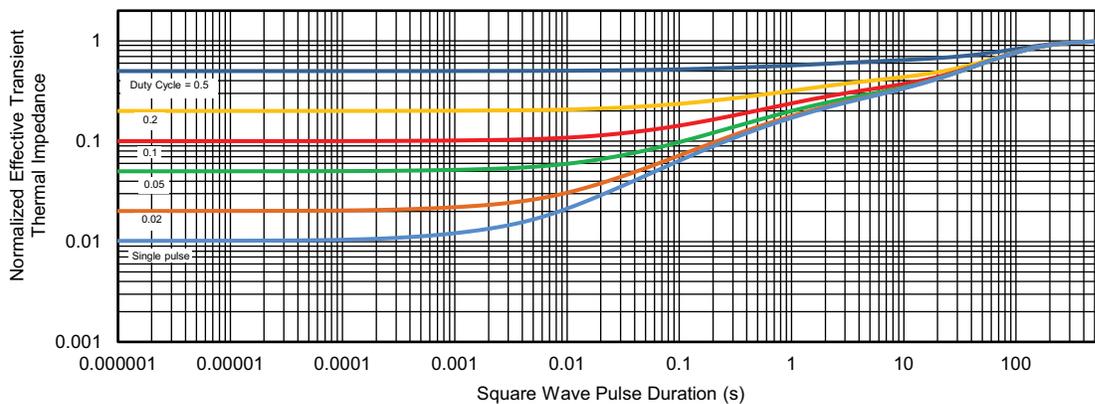
Drain Source Breakdown vs. Junction Temperature



THERMAL RATINGS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Case



Normalized Thermal Transient Impedance, Junction-to-Ambient

Note

- The characteristics shown in the two graphs
 - Normalized Transient Thermal Impedance Junction-to-Ambient ($25\text{ }^\circ\text{C}$)
 - Normalized Transient Thermal Impedance Junction-to-Case ($25\text{ }^\circ\text{C}$)
- are given for general guidelines only to enable the user to get a “ball park” indication of part capabilities. The data are extracted from single pulse transient thermal impedance characteristics which are developed from empirical measurements. The latter is valid for the part mounted on printed circuit board - FR4, size 1" x 1" x 0.062", double sided with 2 oz. copper, 100 % on both sides. The part capabilities can widely vary depending on actual application parameters and operating conditions

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