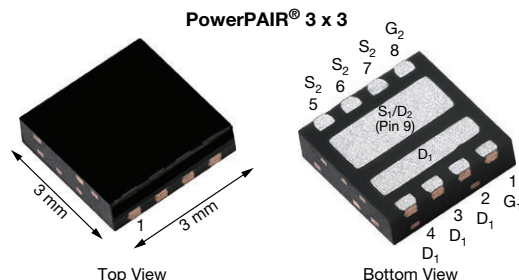


Dual N-Channel 30 V (D-S) MOSFETs



FEATURES

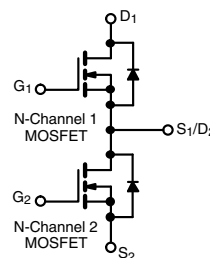
- TrenchFET® Gen IV power MOSFETs
- 100 % R_g and UIS tested
- PowerPAIR® integrated half-bridge MOSFET power stage
- Optimized Q_{gd}/Q_{gs} ratio improves switching characteristics
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- CPU core power
- Computer / server peripherals
- POL
- Synchronous buck converter
- Telecom DC/DC



PRODUCT SUMMARY		
	CHANNEL-1	CHANNEL-2
V _{DS} (V)	30	30
R _{DS(on)} max. (Ω) at V _{GS} = 10 V	0.092	0.005
R _{DS(on)} max. (Ω) at V _{GS} = 4.5 V	0.0155	0.0075
Q _g typ. (nC)	3.7	6.3
I _D (A) ^a	33.6	63
Configuration	Dual	

ORDERING INFORMATION	
Package	PowerPAIR 3 x 3
Lead (Pb)-free and halogen-free	SiZ340DDT-T1-GE3

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)				
PARAMETER	SYMBOL	CHANNEL-1	CHANNEL-2	UNIT
Drain-source voltage	V _{DS}	30	30	V
Gate-source voltage	V _{GS}	+20, -16	+20, -16	
Continuous drain current (T _J = 150 °C)	I _D	33.6	63	A
		26.9	50	
		15.8 ^{b, c}	23 ^{b, c}	
		12.6 ^{b, c}	18 ^{b, c}	
Pulsed drain current (100 μs pulse width)	I _{DM}	100	150	W
Continuous source drain diode current	I _S	13.9	26	
		3.1 ^{b, c}	3.5 ^{b, c}	
Single pulse avalanche current	I _{AS}	10	15	
Single pulse avalanche energy	E _{AS}	5	11	mJ
Maximum power dissipation	P _D	16.7	31	
		10.7	20	
		3.7 ^{b, c}	4.2 ^{b, c}	
		2.4 ^{b, c}	2.7 ^{b, c}	
Operating junction and storage temperature range	T _J , T _{stg}	-55 to +150		°C
Soldering recommendations (peak temperature) ^d		260		

THERMAL RESISTANCE RATINGS							
PARAMETER		SYMBOL	CHANNEL-1		CHANNEL-2		UNIT
			TYP.	MAX.	TYP.	MAX.	
Maximum junction-to-ambient ^{b, f}	t ≤ 10 s	R _{thJA}	27	34	24	30	°C/W
Maximum junction-to-case (drain)	Steady state	R _{thJC}	6	7.5	3.2	4	

Notes

- T_C = 25 °C
- Surface mounted on 1" x 1" FR4 board
- t = 10 s
- See solder profile (www.vishay.com/doc?73257). The PowerPAIR is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components
- Maximum under steady state conditions is 69 °C/W for channel-1 and 64 °C/W for channel-2

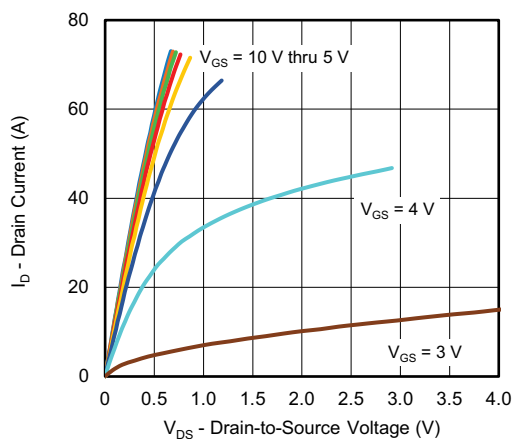
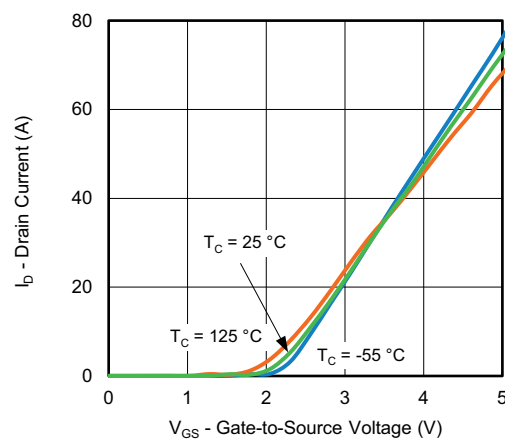
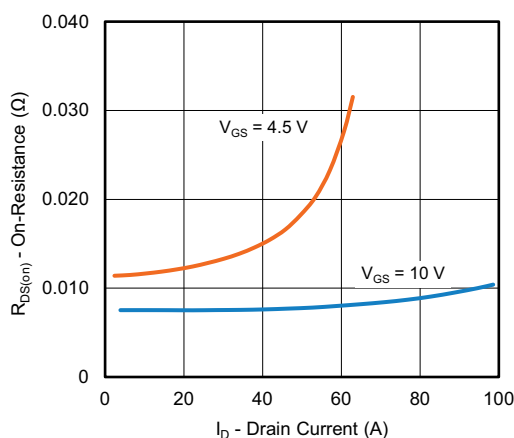
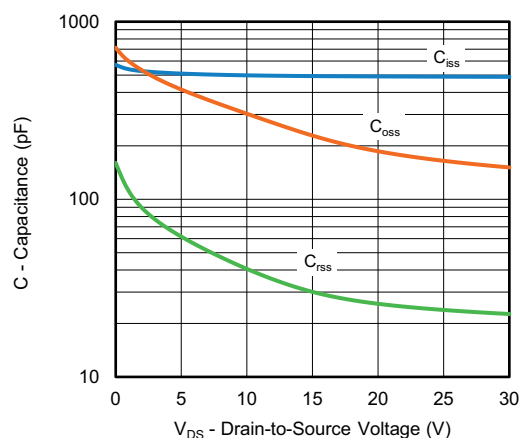
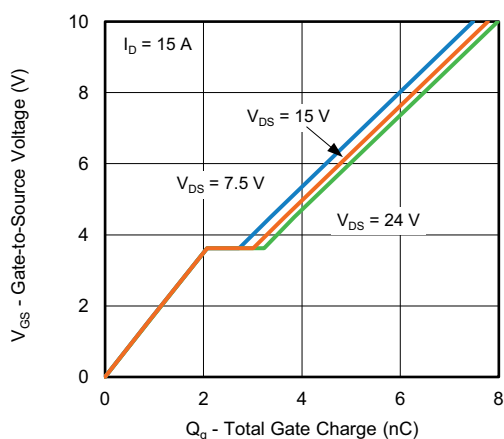
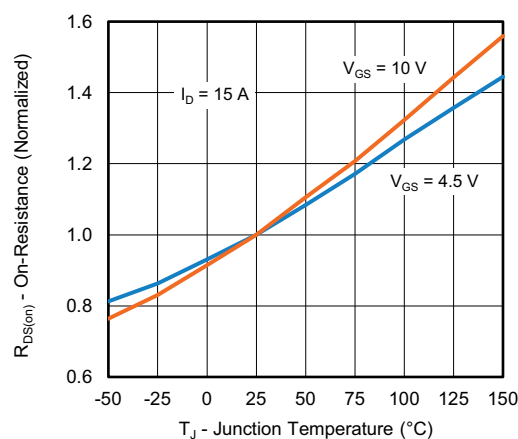


SPECIFICATIONS ($T_J = 25^\circ\text{C}$, unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-source breakdown voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	Ch-1	30	-	-	V
		$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	Ch-2	30	-	-	
V_{DS} Temperature coefficient	$\Delta V_{DS}/T_J$	$I_D = 10\text{ mA}$	Ch-1	-	21	-	mV/ $^\circ\text{C}$
		$I_D = 10\text{ mA}$	Ch-2	-	23.1	-	
$V_{GS(th)}$ Temperature coefficient	$\Delta V_{GS(th)}/T_J$	$I_D = 250\text{ }\mu\text{A}$	Ch-1	-	-4.0	-	mV/ $^\circ\text{C}$
		$I_D = 250\text{ }\mu\text{A}$	Ch-2	-	-4.9	-	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	Ch-1	1.1	-	2.4	V
		$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	Ch-2	1.1	-	2.4	
Gate source leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = +20\text{ V} / -16\text{ V}$	Ch-1	-	-	100	nA
		$V_{DS} = 0\text{ V}, V_{GS} = +20\text{ V} / -16\text{ V}$	Ch-2	-	-	100	
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	Ch-1	-	-	1	μA
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	Ch-2	-	-	1	
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$	Ch-1	-	-	10	
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$	Ch-2	-	-	10	
Drain-source on-state resistance ^b	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	Ch-1	-	0.0075	0.0092	Ω
		$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$	Ch-2	-	0.0041	0.005	
		$V_{GS} = 4.5\text{ V}, I_D = 7\text{ A}$	Ch-1	-	0.012	0.0155	
		$V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$	Ch-2	-	0.006	0.0075	
Forward transconductance ^b	g_{fs}	$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	Ch-1	-	23	-	S
		$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	Ch-2	-	55	-	
Dynamic ^a							
Input capacitance	C_{iss}	Channel-1 $V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, f = 1\text{ MHz}$ Channel-2 $V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, f = 1\text{ MHz}$	Ch-1	-	500	-	pF
			Ch-2	-	960	-	
Output capacitance	C_{oss}		Ch-1	-	235	-	
			Ch-2	-	420	-	
Reverse transfer capacitance	C_{rss}		Ch-1	-	30	-	
			Ch-2	-	25	-	
C_{rss}/C_{iss} ratio			Ch-1	-	0.062	0.12	
			Ch-2	-	0.033	0.066	
Total gate charge	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	Ch-1	-	8.4	12.6	nC
		$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 20\text{ A}$	Ch-2	-	14	21	
		$V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$	Ch-1	-	4.0	6.0	
		$V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$	Ch-2	-	6.3	9.5	
Gate-source charge	Q_{gs}	Channel-1 $V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$	Ch-1	-	2.2	-	
			Ch-2	-	3.5	-	
Gate-drain charge	Q_{gd}	Channel-2 $V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$	Ch-1	-	1.0	-	
			Ch-2	-	1.3	-	
Output charge	Q_{oss}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}$	Ch-1	-	5.7	-	

**Notes**

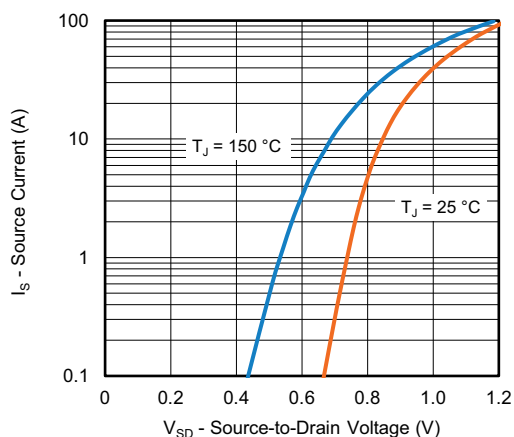
- a. Guaranteed by design, not subject to production testing
b. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

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.

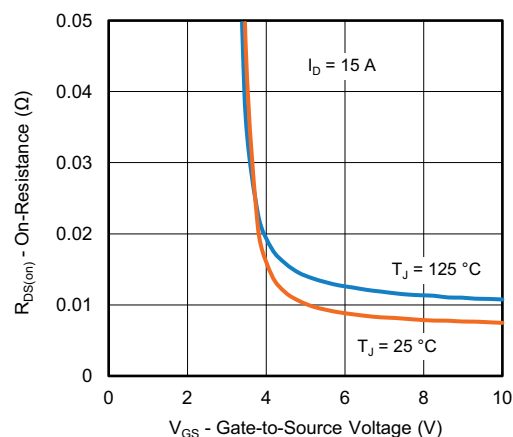
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature



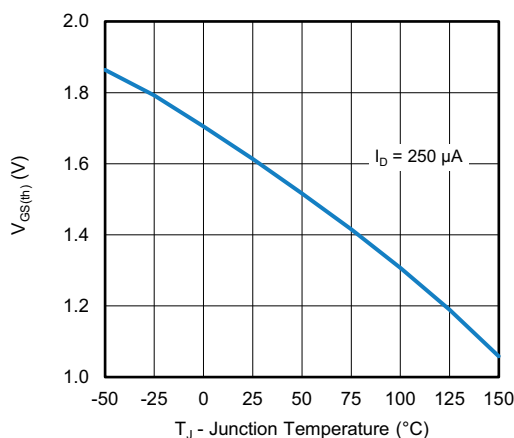
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



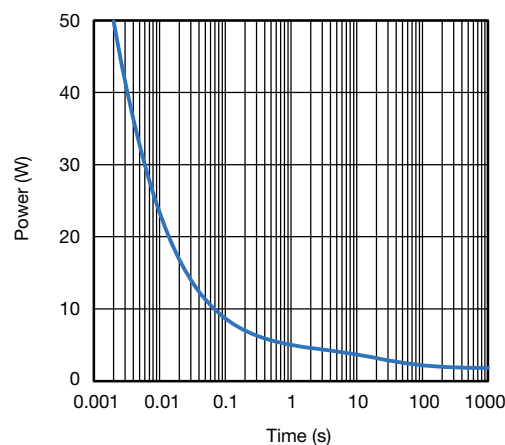
Source-Drain Diode Forward Voltage



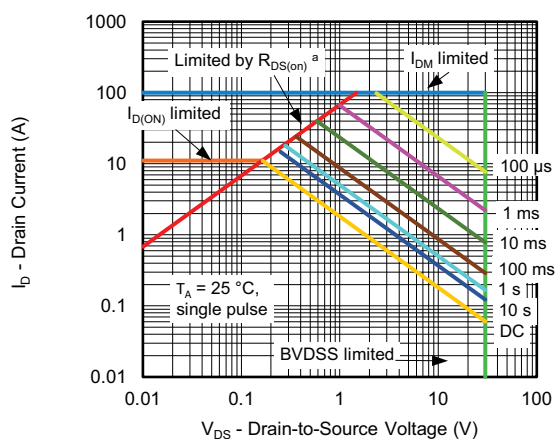
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



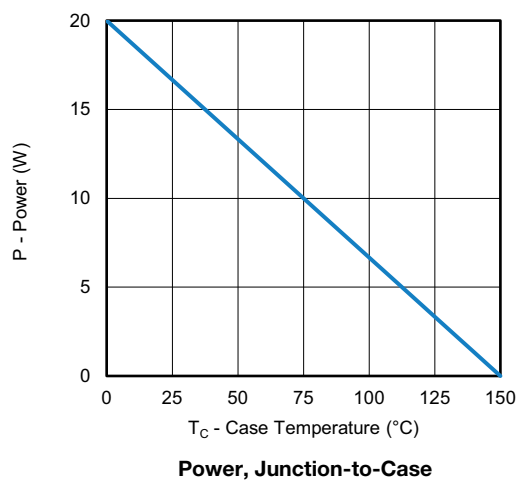
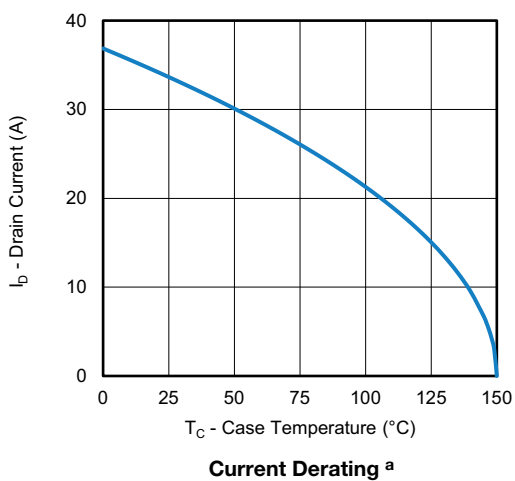
Safe Operating Area, Junction-to-Ambient

Note

a. $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

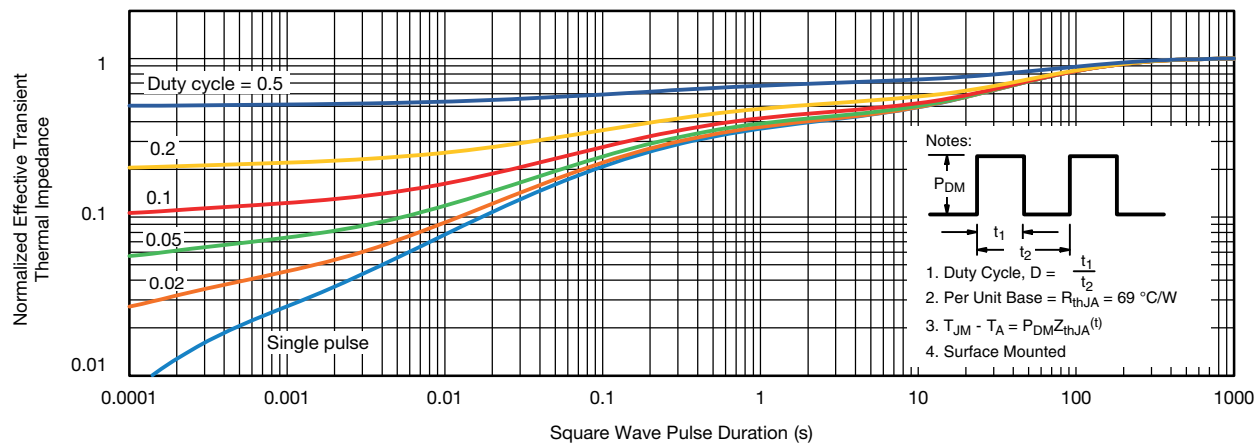
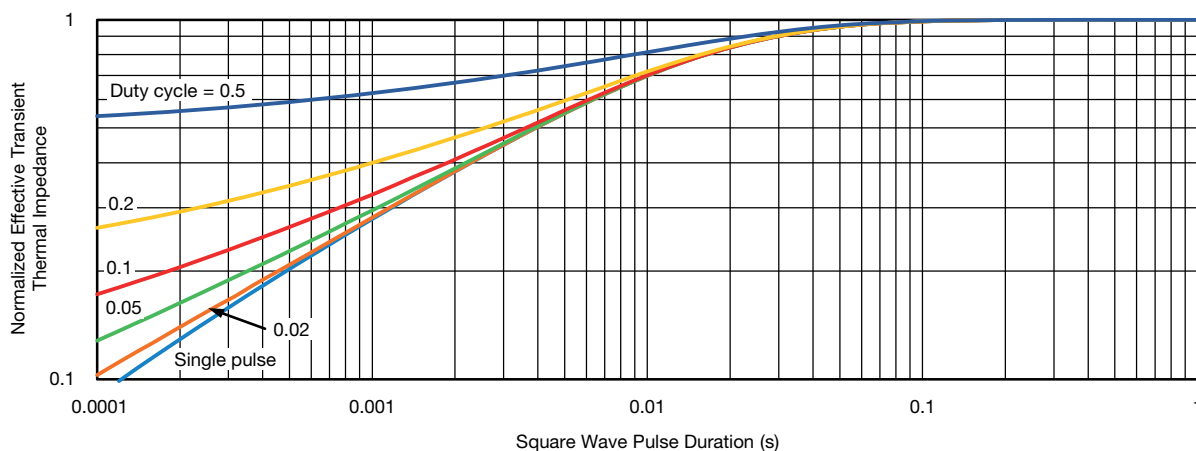


CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



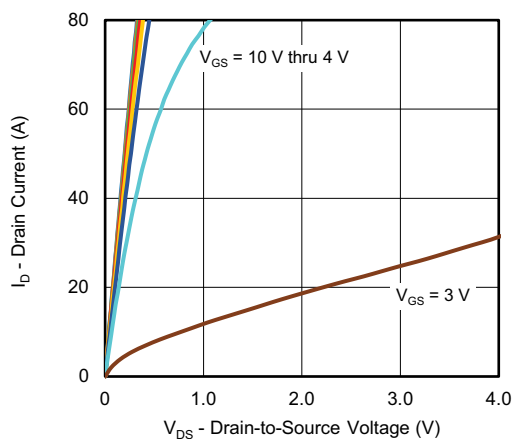
Note

- a. The power dissipation P_D is based on T_J max. = 25 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit

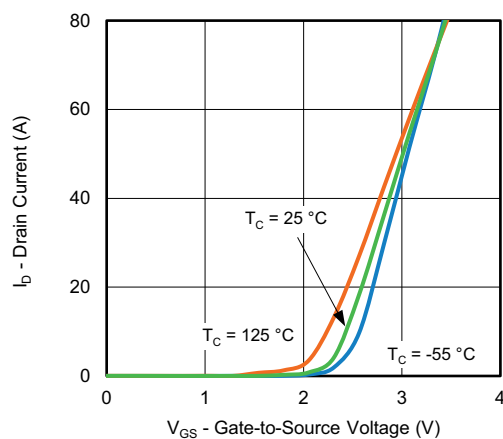
CHANNEL-1 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Normalized Thermal Transient Impedance, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Case



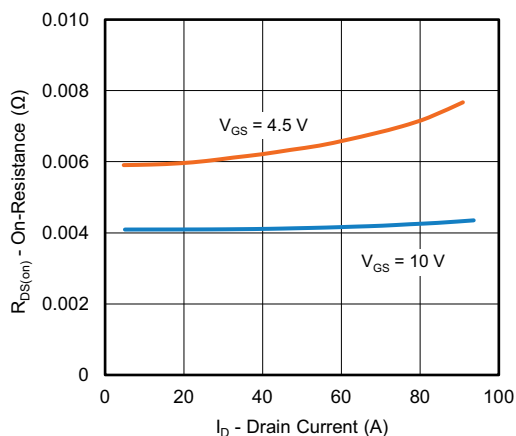
CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



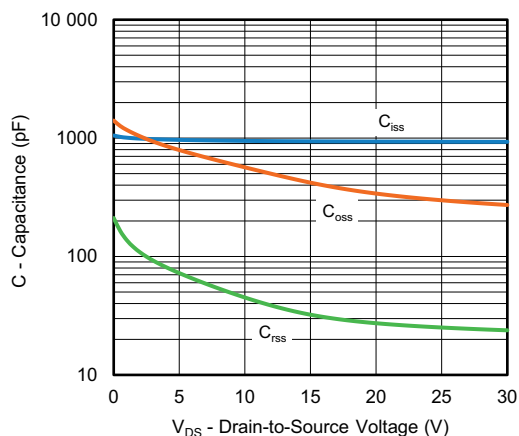
Output Characteristics



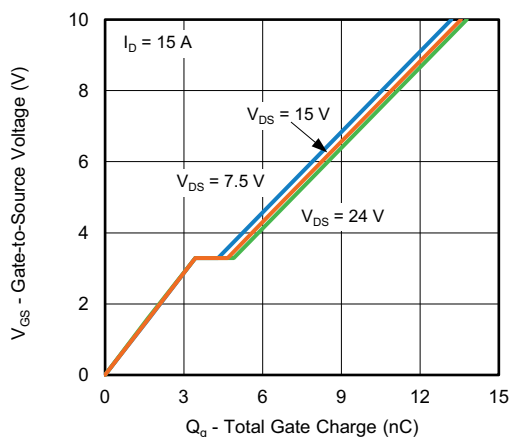
Transfer Characteristics



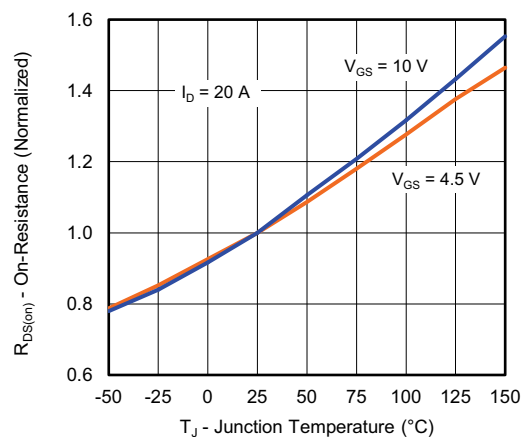
On-Resistance vs. Drain Current



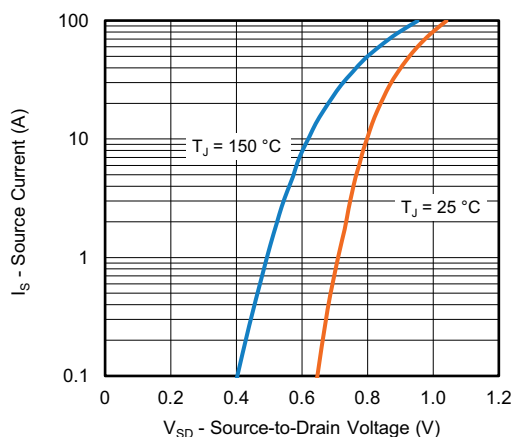
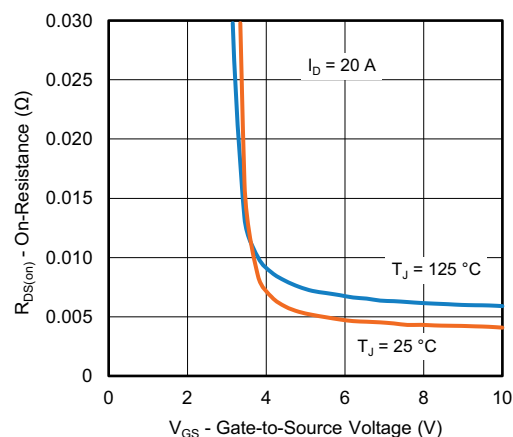
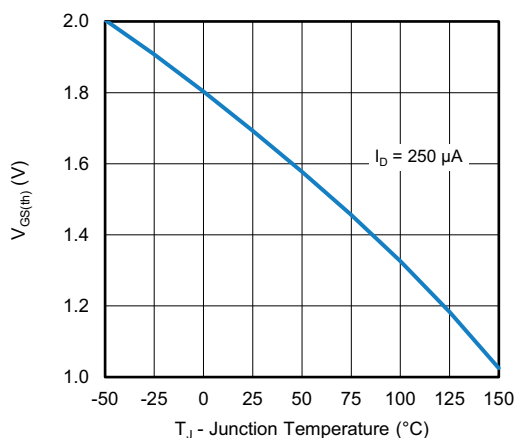
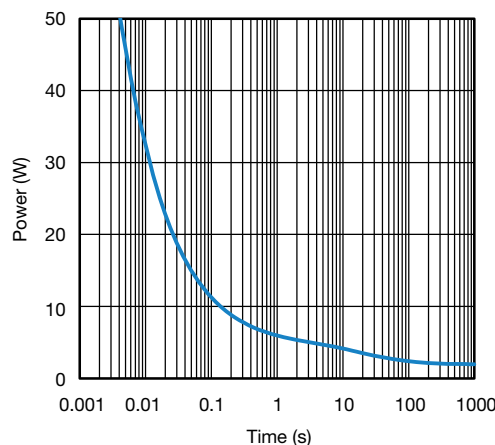
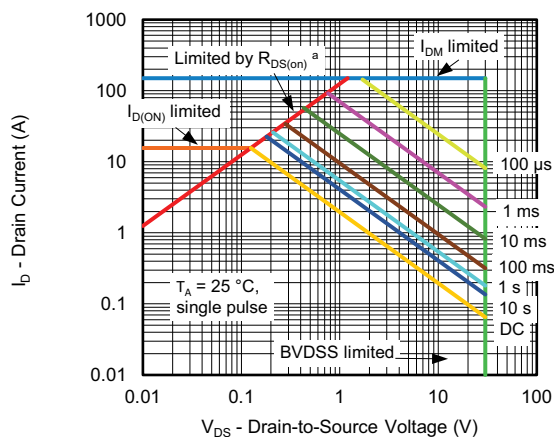
Capacitance



Gate Charge



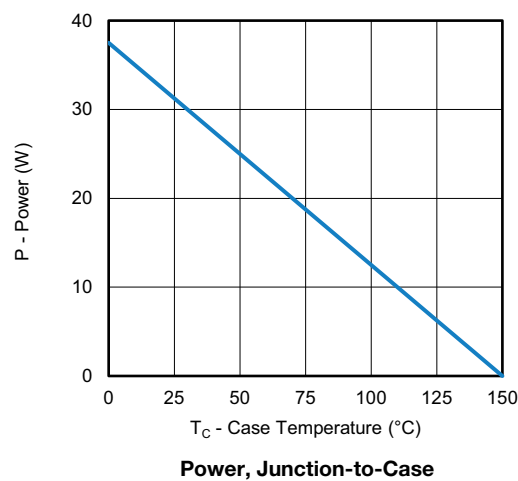
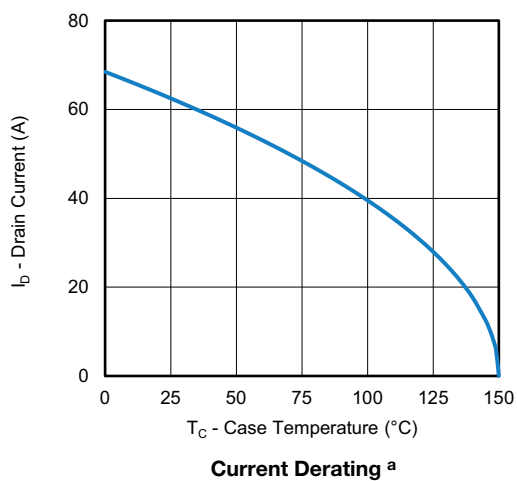
On-Resistance vs. Junction Temperature

CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power, Junction-to-Ambient

Safe Operating Area, Junction-to-Ambient
Note

a. $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

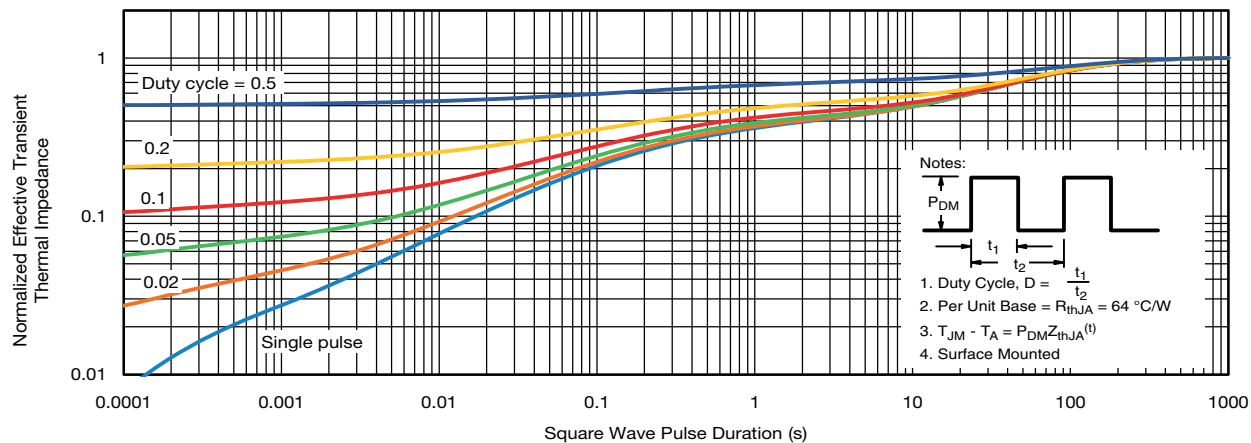
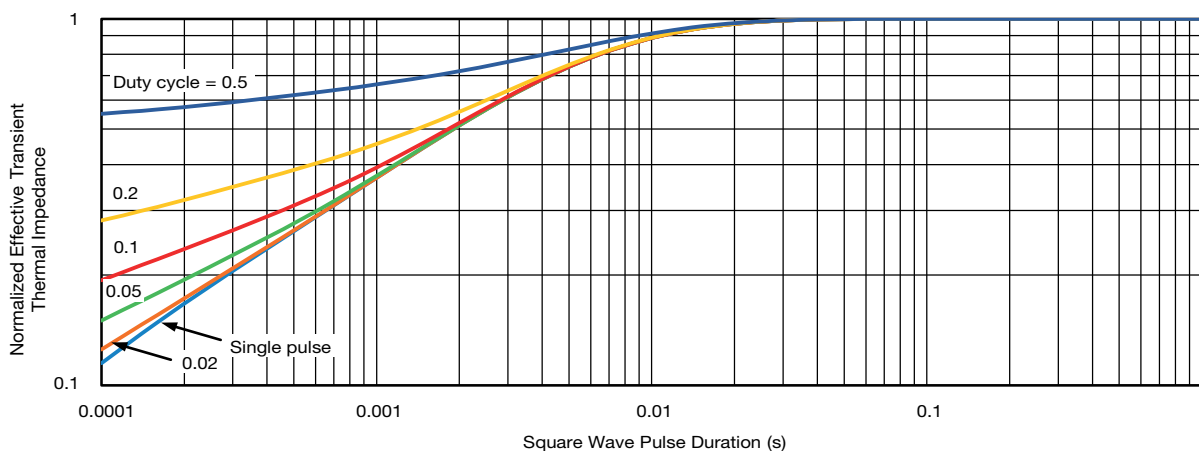


CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Note

- a. The power dissipation P_D is based on T_J max. = 25 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit

CHANNEL-2 TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Normalized Thermal Transient Impedance, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Case

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