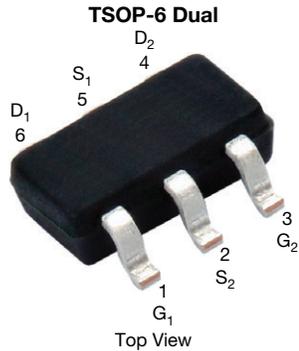


## N- and P-Channel 30 V (D-S) MOSFET



Marking Code: ED

PRODUCT SUMMARY		
	N-CHANNEL	P-CHANNEL
$V_{DS}$ (V)	30	-30
$R_{DS(on)}$ ( $\Omega$ ) at $V_{GS} = \pm 10$ V	0.058	0.165
$R_{DS(on)}$ ( $\Omega$ ) at $V_{GS} = \pm 4.5$ V	0.073	0.276
$Q_g$ typ. (nC)	1.8	2.4
$I_D$ (A) <sup>c</sup>	3.7	-2.1
Configuration	N- and p-pair	

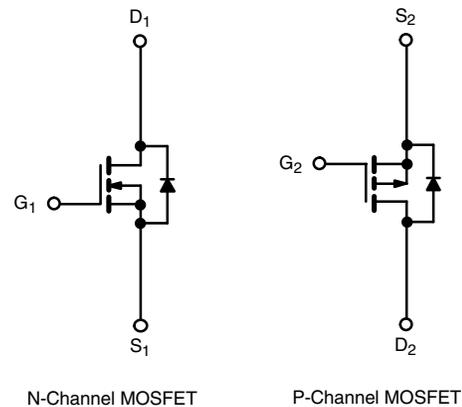
### FEATURES

- TrenchFET<sup>®</sup> power MOSFET
- 100 %  $R_g$  tested
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**  
 Available

### APPLICATIONS

- Load switch
- DC/DC converter
- Drivers: motor, solenoid, relay



ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free and halogen-free	Si3552BDV-T1-GE3

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25$ °C, unless otherwise noted)				
PARAMETER	SYMBOL	N-CHANNEL	P-CHANNEL	UNIT
Drain-source voltage	$V_{DS}$	30	-30	V
Gate-source voltage	$V_{GS}$	$\pm 20$	$\pm 20$	
Continuous drain current ( $T_J = 150$ °C) <sup>a, b</sup>	$I_D$	$T_A = 25$ °C	3.4	A
		$T_A = 70$ °C	2.7	
Pulsed drain current	$I_{DM}$	15	-6	A
Continuous source current (diode conduction) <sup>a, b</sup>	$I_S$	0.95	-0.91	
maximum power dissipation <sup>a, b</sup>	$P_D$	$T_A = 25$ °C	1.1	W
		$T_A = 70$ °C	0.7	
Operating junction and storage temperature range	$T_J, T_{stg}$	-55 to +150		°C

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient <sup>a</sup>	$t \leq 5$ s	$R_{thJA}$	97	115	°C/W
	Steady state		132	155	
Maximum junction-to-lead	Steady state	$R_{thJL}$	78	95	

### Notes

- Surface mounted on FR4 board
- $t \leq 5$  s
- $T_C = 25$  °C



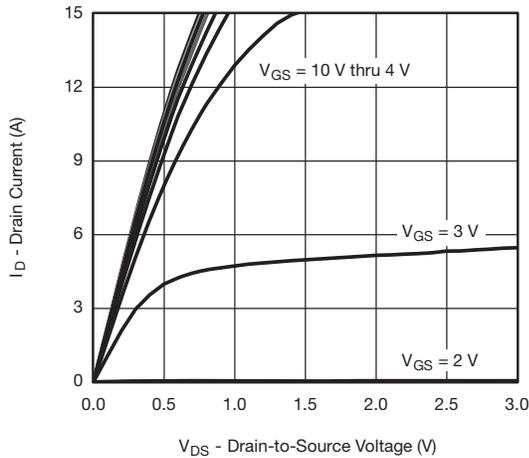
SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	
<b>Static</b>								
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	N-Ch	1.2	-	2.2	V	
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	P-Ch	-1.2	-	-2.5		
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 20 V	N-Ch	-	-	± 100	nA	
			P-Ch	-	-	± 100		
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V	N-Ch	-	-	1	μA	
			P-Ch	-	-	-1		
			V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	N-Ch	-	-		10
			V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C	P-Ch	-	-		-10
On-state drain current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	N-Ch	10	-	-	A	
			V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -10 V	P-Ch	-6	-		-
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3.4 A	N-Ch	-	0.047	0.058	Ω	
			V <sub>GS</sub> = -10 V, I <sub>D</sub> = -1.9 A	P-Ch	-	0.137		0.165
			V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3 A	N-Ch	-	0.058		0.073
			V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.2 A	P-Ch	-	0.230		0.267
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 3.4 A	N-Ch	-	10	-	S	
			V <sub>DS</sub> = -15 V, I <sub>D</sub> = -1.9 A	P-Ch	-	3		-
Diode forward voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1 A, V <sub>GS</sub> = 0 V	N-Ch	-	0.85	1.2	V	
		I <sub>S</sub> = -1 A, V <sub>GS</sub> = 0 V	P-Ch	-	-0.84	-1.2		
<b>Dynamic <sup>b</sup></b>								
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3.4 A	N-Ch	-	1.8	3	nC	
			V <sub>DS</sub> = -15 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.9 A	P-Ch	-	2.4		3.6
Gate-source charge	Q <sub>gs</sub>	N-channel V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3.4 A	N-Ch	-	0.74	-	nC	
			P-Ch	-	1.2	-		
Gate-drain charge	Q <sub>gd</sub>	P-channel V <sub>DS</sub> = -15 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.9 A	N-Ch	-	0.42	-	nC	
			P-Ch	-	0.8	-		
Gate resistance	R <sub>g</sub>	f = 1 MHz	N-Ch	1	5	10	Ω	
			P-Ch	1.5	7.3	14.6		
Turn-on delay time	t <sub>d(on)</sub>	N-channel V <sub>DD</sub> = 15 V, R <sub>L</sub> = 5.6 Ω, I <sub>D</sub> ≅ 2.7 A, V <sub>GEN</sub> = 10 V, R <sub>g</sub> = 1 Ω  P-channel V <sub>DD</sub> = -15 V, R <sub>L</sub> = 10 Ω, I <sub>D</sub> ≅ -1.5 A, V <sub>GEN</sub> = -10 V, R <sub>g</sub> = 1 Ω	N-Ch	-	5	10	ns	
Rise time	t <sub>r</sub>		P-Ch	-	4	8		
			N-Ch	-	15	30		
Turn-off delay time	t <sub>d(off)</sub>		P-Ch	-	9	18		
			N-Ch	-	10	20		
Fall time	t <sub>f</sub>		P-Ch	-	11	18		
			N-Ch	-	10	20		
Source-drain reverse recovery time	t <sub>rr</sub>		I <sub>F</sub> = 1 A, di/dt = 100 A/μs	N-Ch	-	10		20
		I <sub>F</sub> = -1 A, di/dt = 100 A/μs	P-Ch	-	14	21		

**Notes**

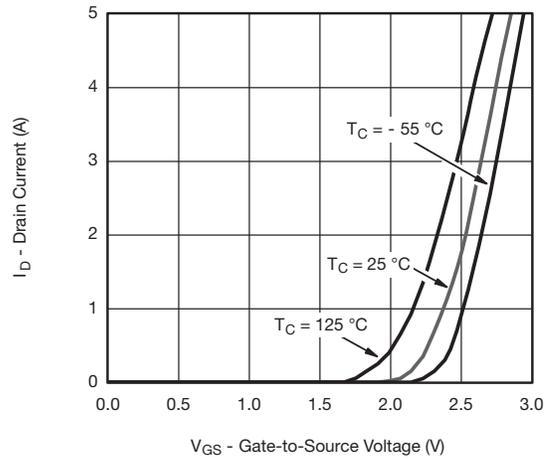
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
- b. Guaranteed by design, not subject to production testing

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.

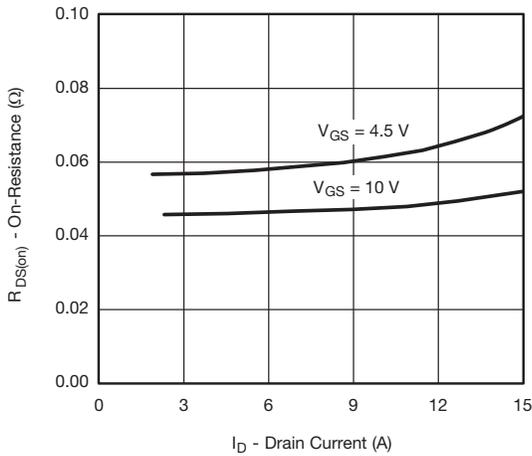
**N-CHANNEL TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



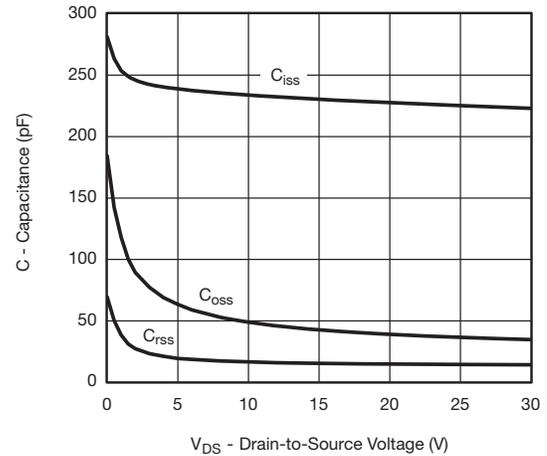
**Output Characteristics**



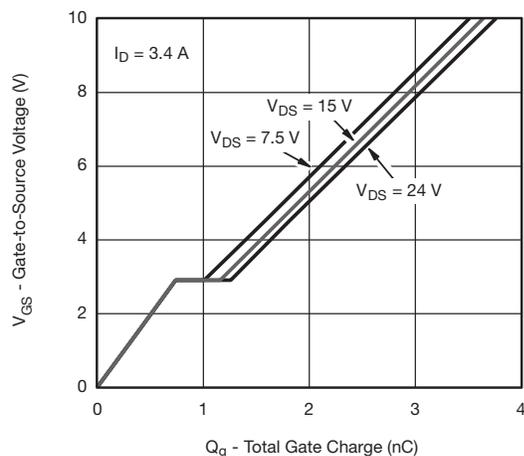
**Transfer Characteristics**



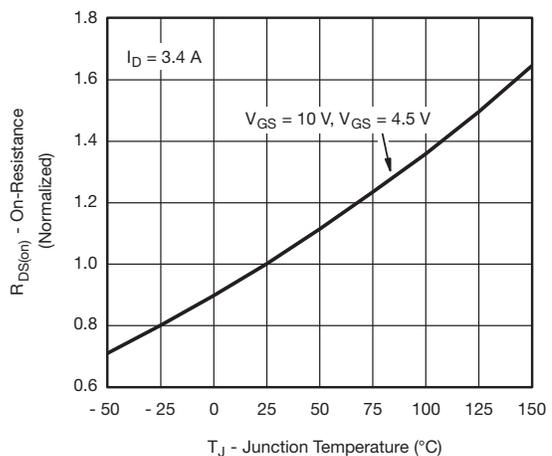
**On-Resistance vs. Drain Current**



**Capacitance**



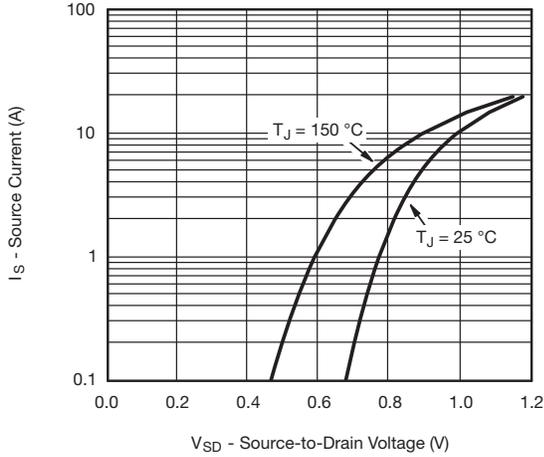
**Gate Charge**



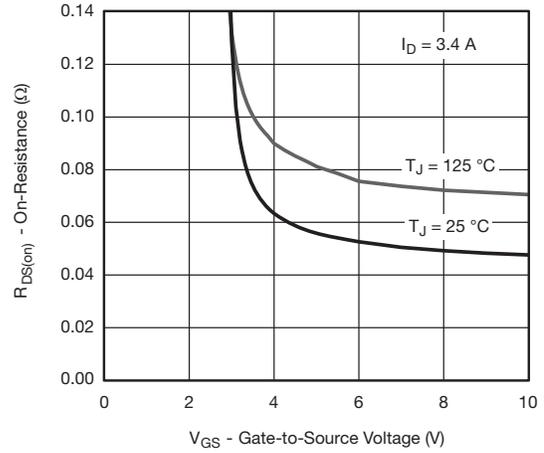
**On-Resistance vs. Junction Temperature**



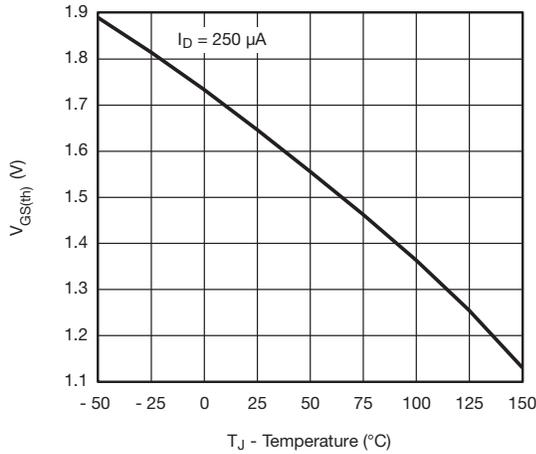
**N-CHANNEL TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



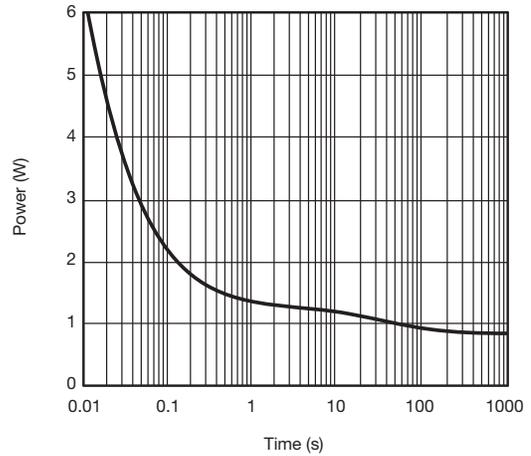
**Source-Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**



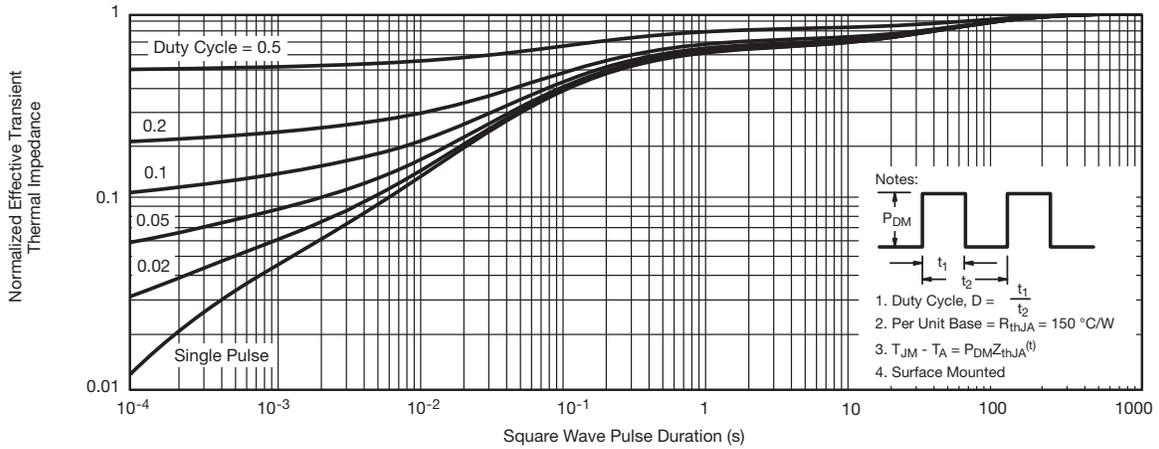
**Threshold Voltage**



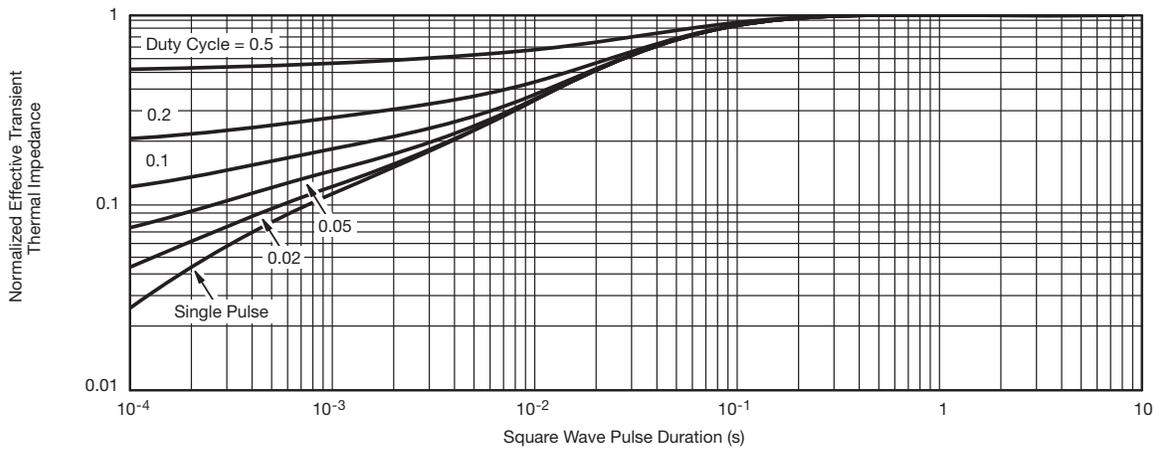
**Single Pulse Power (Junction-to-Ambient)**



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



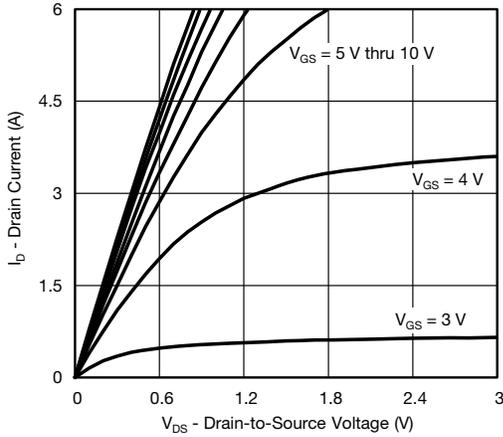
**Normalized Thermal Transient Impedance, Junction-to-Ambient**



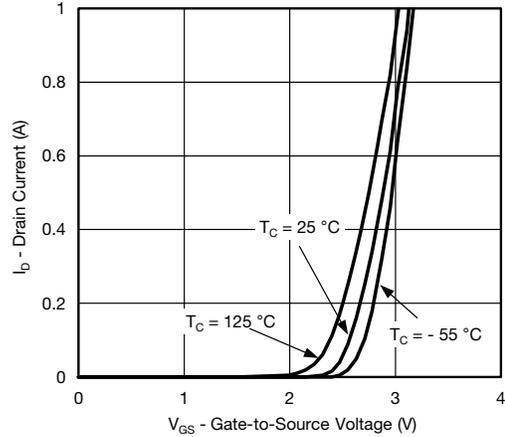
**Normalized Thermal Transient Impedance, Junction-to-Foot**



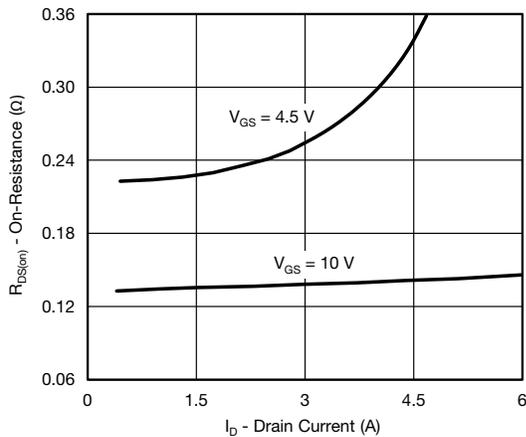
**P-CHANNEL TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



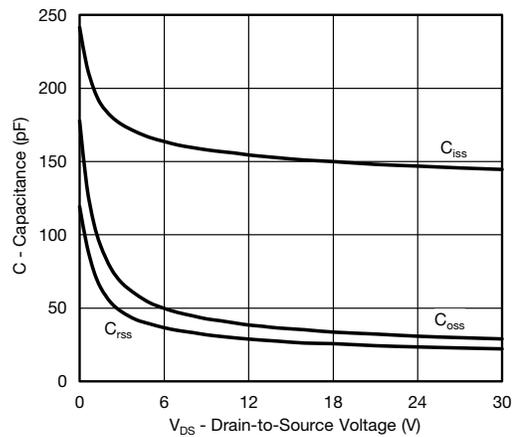
**Output Characteristics**



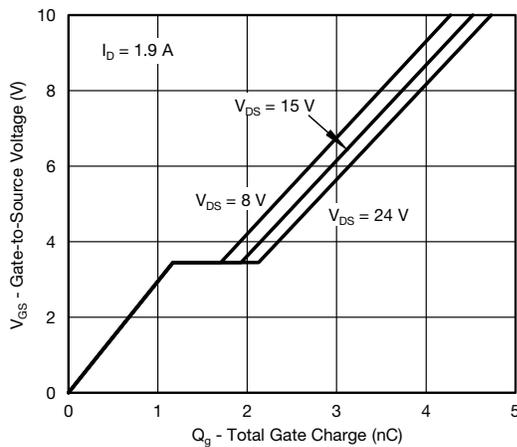
**Transfer Characteristics**



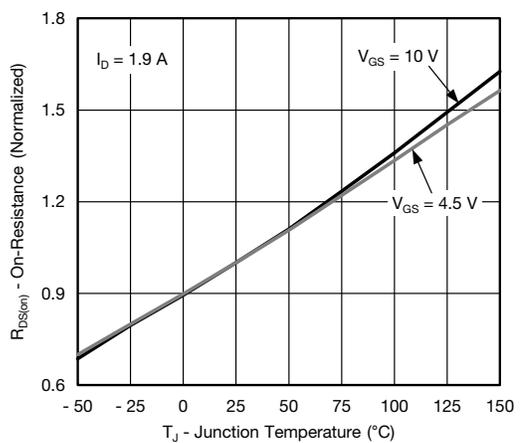
**On-Resistance vs. Drain Current**



**Capacitance**



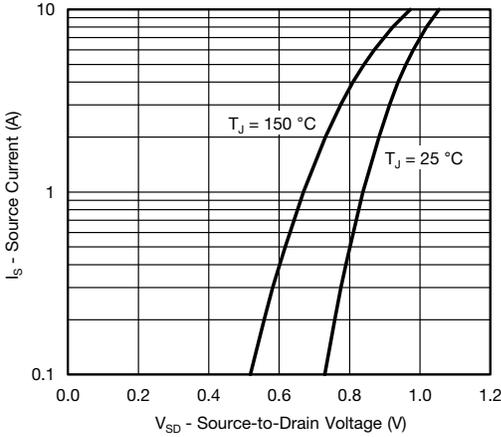
**Gate Charge**



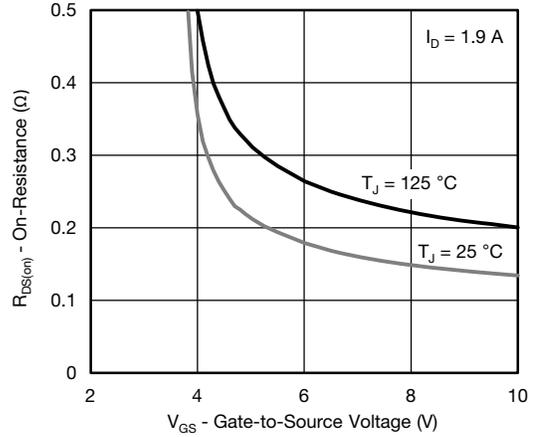
**On-Resistance vs. Junction Temperature**



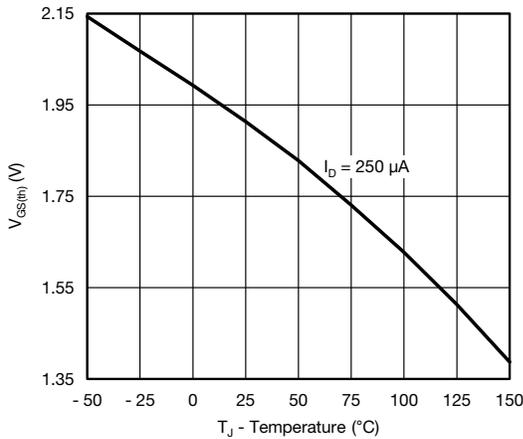
**P-CHANNEL TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



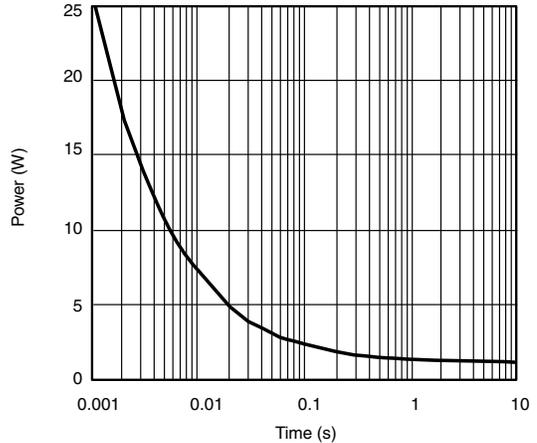
**Source-Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**



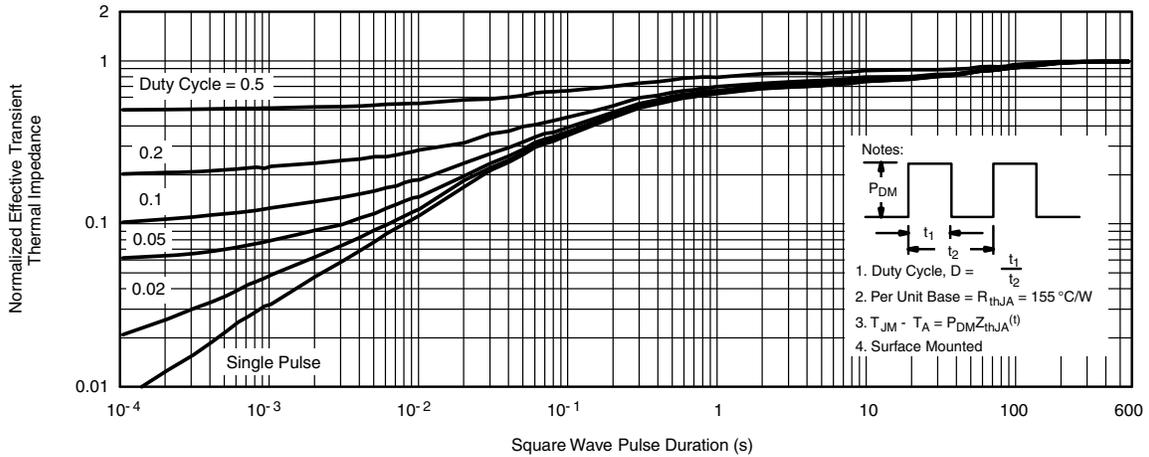
**Threshold Voltage**



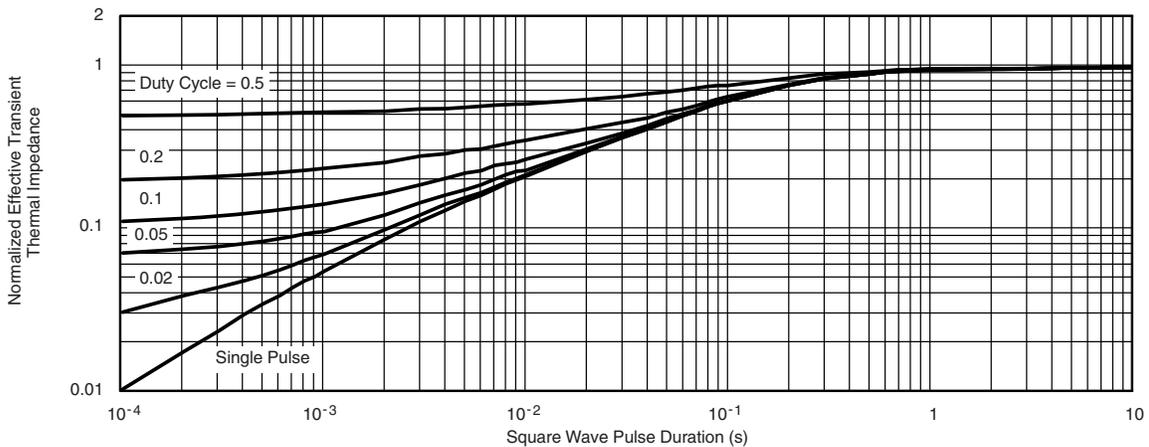
**Single Pulse Power (Junction-to-Ambient)**



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



**Normalized Thermal Transient Impedance, Junction-to-Ambient**



**Normalized Thermal Transient Impedance, Junction-to-Foot**

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