



N-Channel 60-V (D-S), 150 °C MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a	Q_g (Typ)
60	0.036 at $V_{GS} = 10$ V	12	10.5 nC
	0.042 at $V_{GS} = 4.5$ V	12	

FEATURES

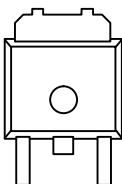
- TrenchFET® Power MOSFET
- 100 % R_g & UIS Tested



APPLICATIONS

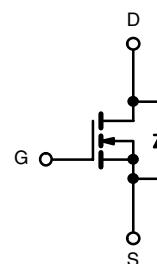
- LCD TV Inverter
- Push Pull Converter

TO-252



Drain Connected to Tab

Top View



N-Channel MOSFET

Order Number:
SUD50N06-36-E3 (Lead (Pb)-free)

ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted					
Parameter	Symbol	Limit	Unit		
Drain-Source Voltage	V_{DS}	60		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150$ °C)	I_D	12 ^a			
		12 ^a			
		5.9 ^b			
		4.7 ^b			
Pulsed Drain Current	I_{DM}	50		A	
Continuous Source-Drain Diode Current	I_S	12 ^a			
		2.0 ^b			
Single Pulse Avalanche Current	I_{AS}	15			
Avalanche Energy	E_{AS}	11.2	mJ		
Maximum Power Dissipation	P_D	24		W	
		15.3			
		2.4 ^b			
		1.5 ^b			
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 ^b	R_{thJA}	43	52	°C/W
Maximum Junction-to-Case	R_{thJC}	4.3	5.2	

Notes:

a. Package limited.

b. Surface mounted on 1" x 1" FR4 board.

**SPECIFICATIONS** $T_J = 25^\circ\text{C}$, unless otherwise noted

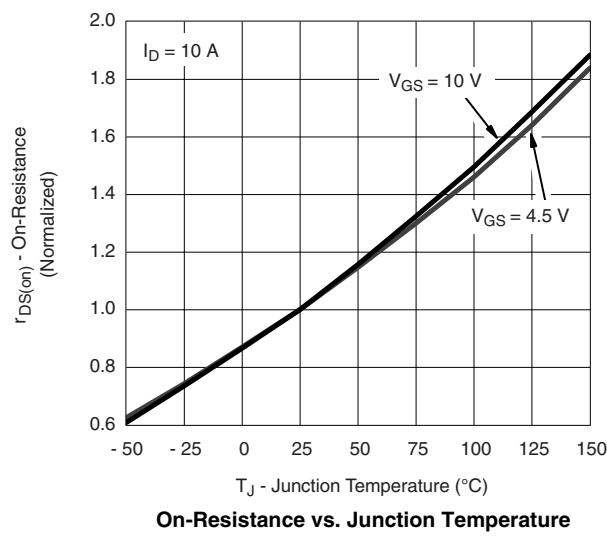
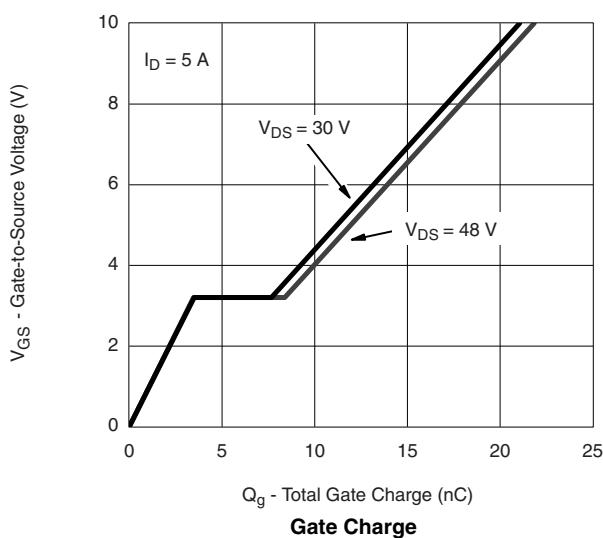
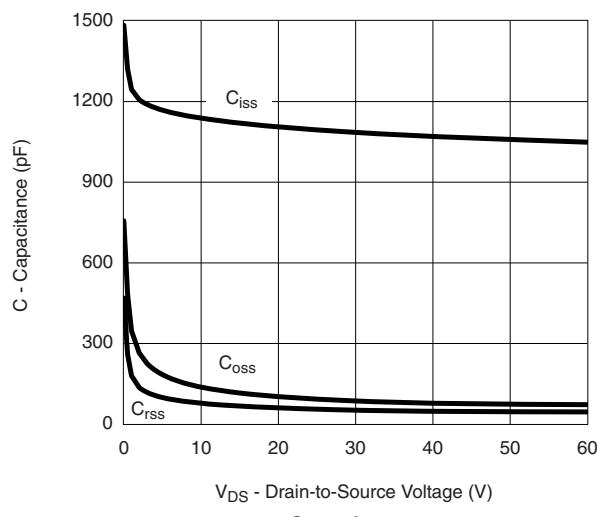
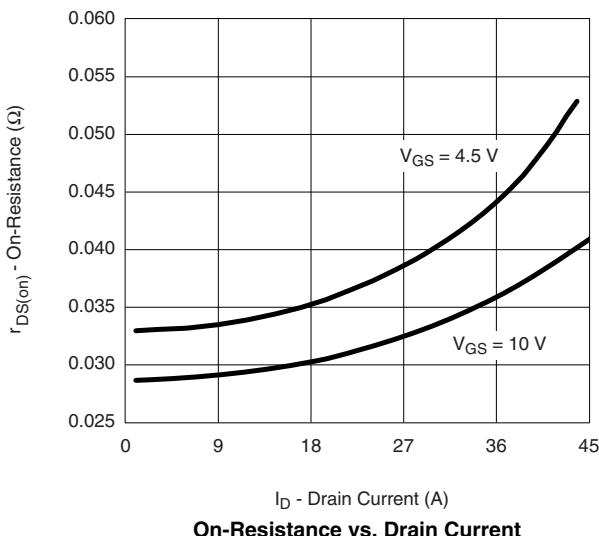
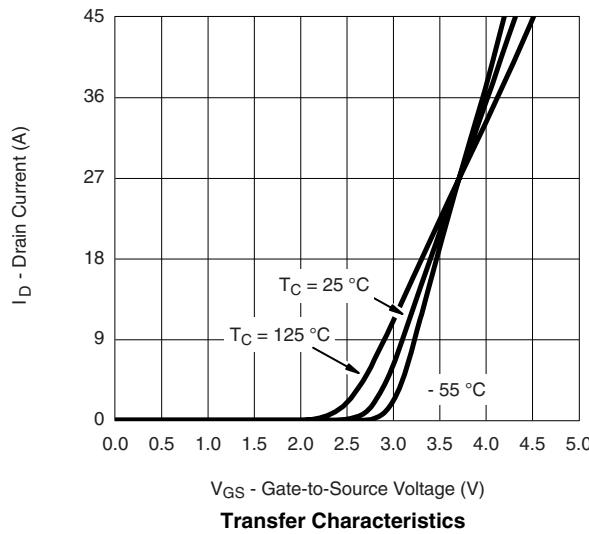
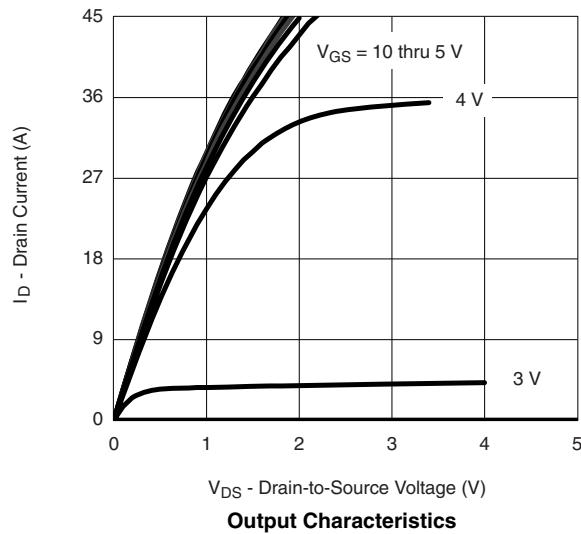
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = 1 \text{ mA}$	60			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = 250 \mu\text{A}$		55		mV/ $^\circ\text{C}$
$V_{GS(\text{th})}$ Temperature Coefficient	$\Delta V_{GS(\text{th})}/T_J$			- 6.3		
Gate-Source Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1.0		3.0	V
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}	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$		1		μA
		$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$			20	
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	30			A
Drain-Source On-State Resistance ^a	$r_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}, I_D = 10 \text{ A}$		0.028	0.036	Ω
		$V_{GS} = 4.5 \text{ V}, I_D = 8 \text{ A}$		0.033	0.042	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ A}$		20		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		1100		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 5 \text{ A}$		21	32	nC
Gate-Source Charge	Q_{gs}			10.5	16	
Gate-Drain Charge	Q_{gd}			3.5		
Gate Resistance	R_g			4.2		
Turn-On Delay Time	$t_{d(\text{on})}$	$V_{DD} = 30 \text{ V}, R_L = 1 \Omega$ $I_D \approx 30 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 1 \Omega$		3.3	6.5	Ω
Rise Time	t_r			18	30	ns
Turn-Off Delay Time	$t_{d(\text{off})}$			250	400	
Fall Time	t_f			35	55	
Turn-On Delay Time	$t_{d(\text{on})}$			68	110	
Rise Time	t_r			6	12	
Turn-Off Delay Time	$t_{d(\text{off})}$			9	18	
Fall Time	t_f			19	30	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25^\circ\text{C}$			20	A
Pulse Diode Forward Current ^a	I_{SM}				50	
Body Diode Voltage	V_{SD}	$I_S = 5.5 \text{ A}$		0.85	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 5.5 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}, T_J = 25^\circ\text{C}$		25	50	ns
Body Diode Reverse Recovery Charge	Q_{rr}			25	50	nC
Reverse Recovery Fall Time	t_a			19		ns
Reverse Recovery Rise Time	t_b			6		

Notes:

a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

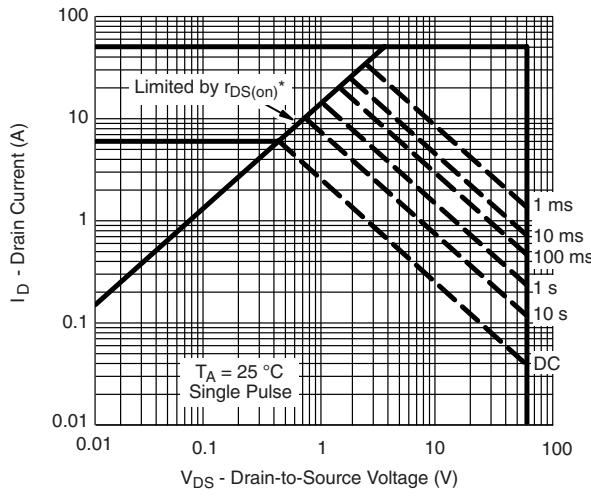
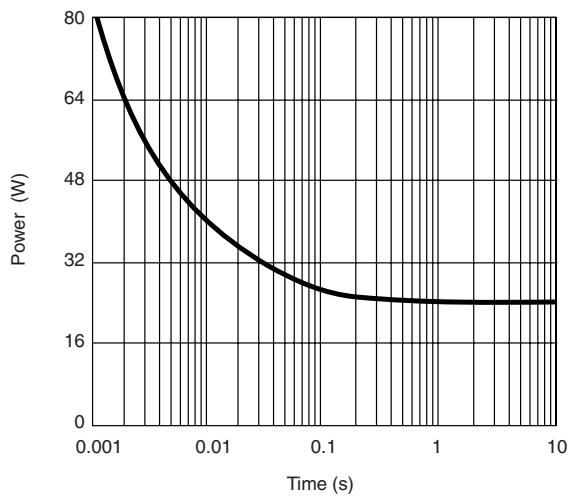
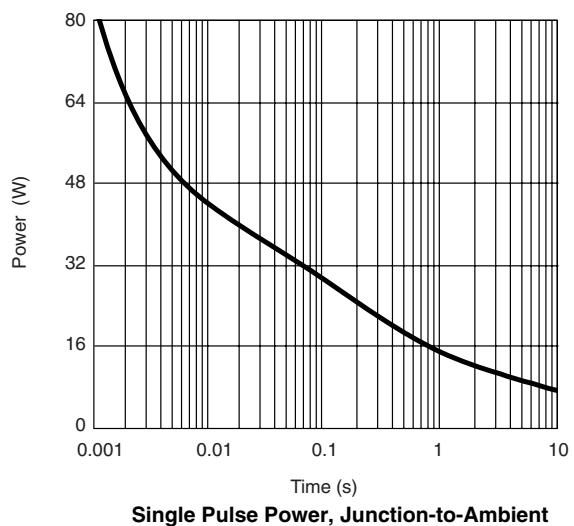
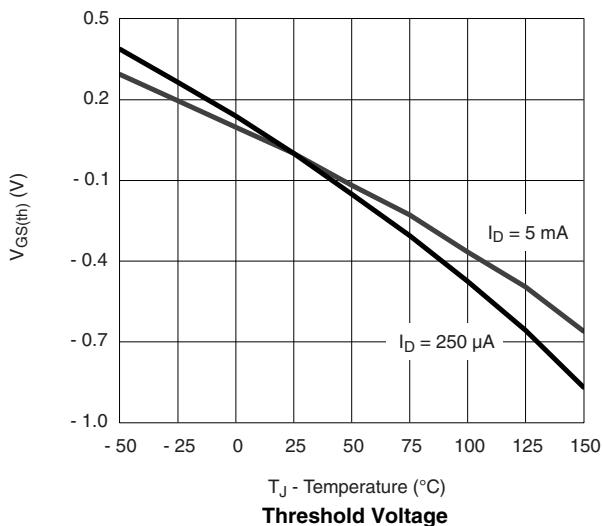
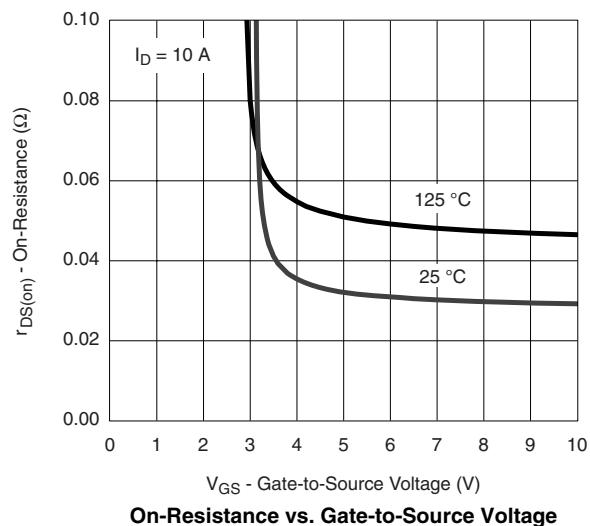
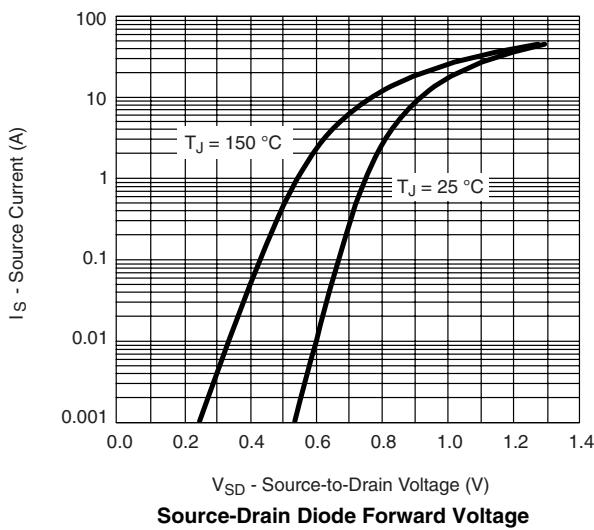
b. Guaranteed by design, not subject to production testing.

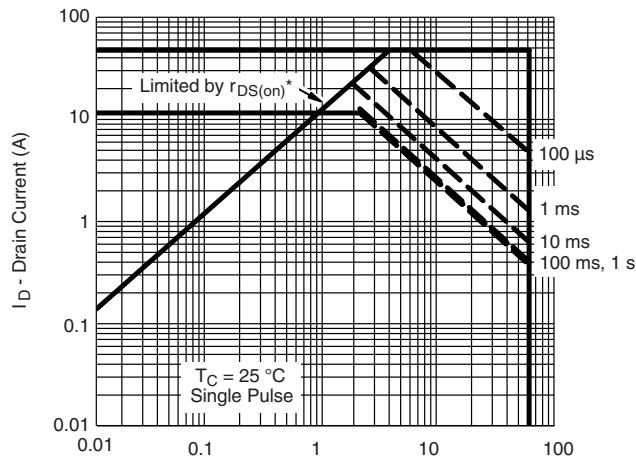
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


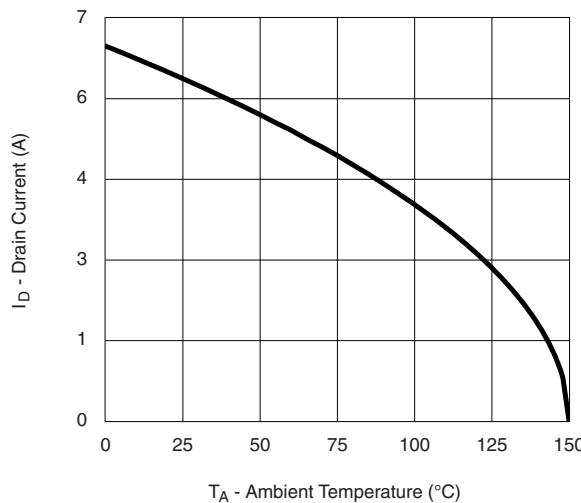
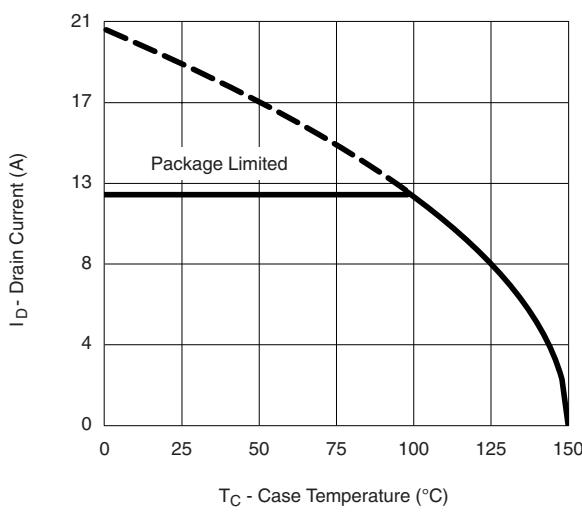
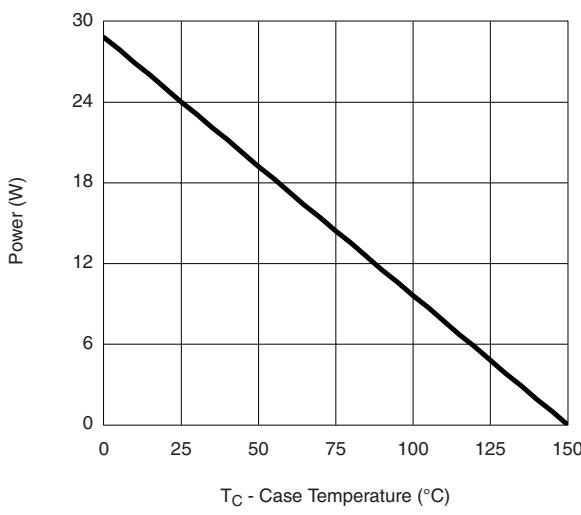
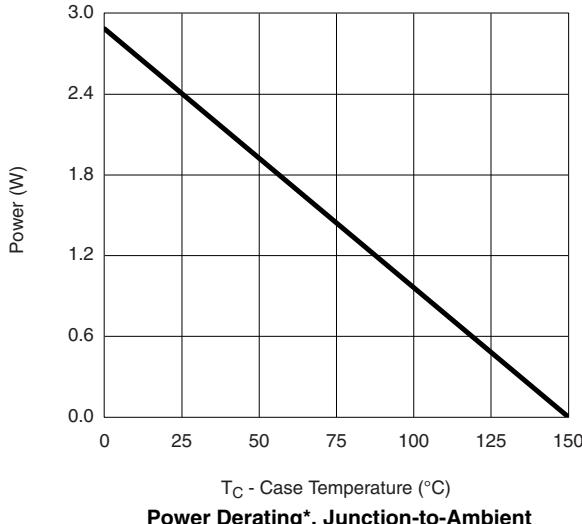
SUD50N06-36

Vishay Siliconix

**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted

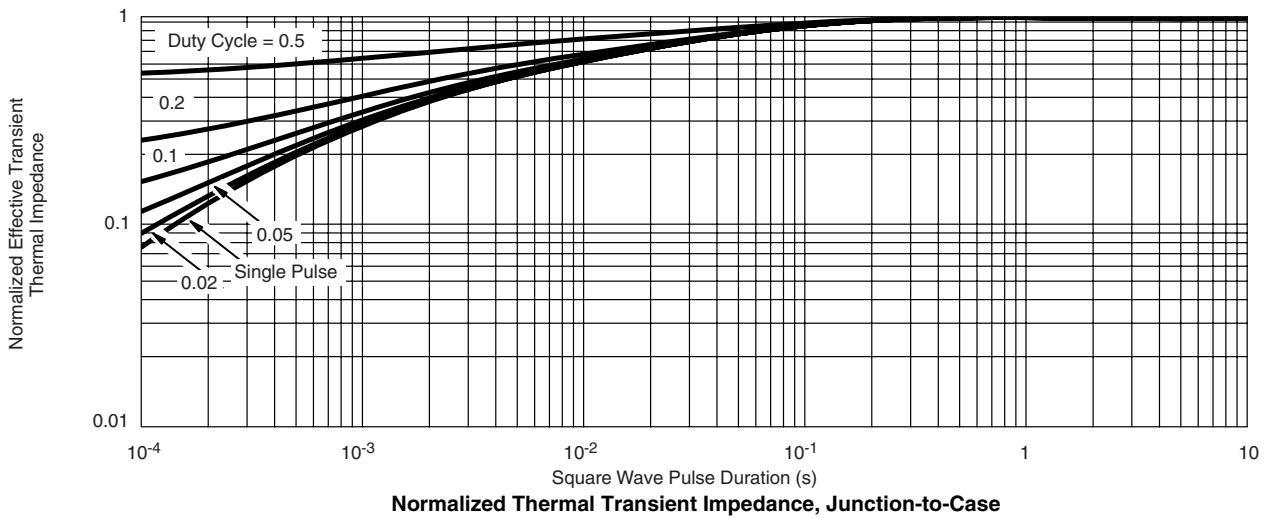
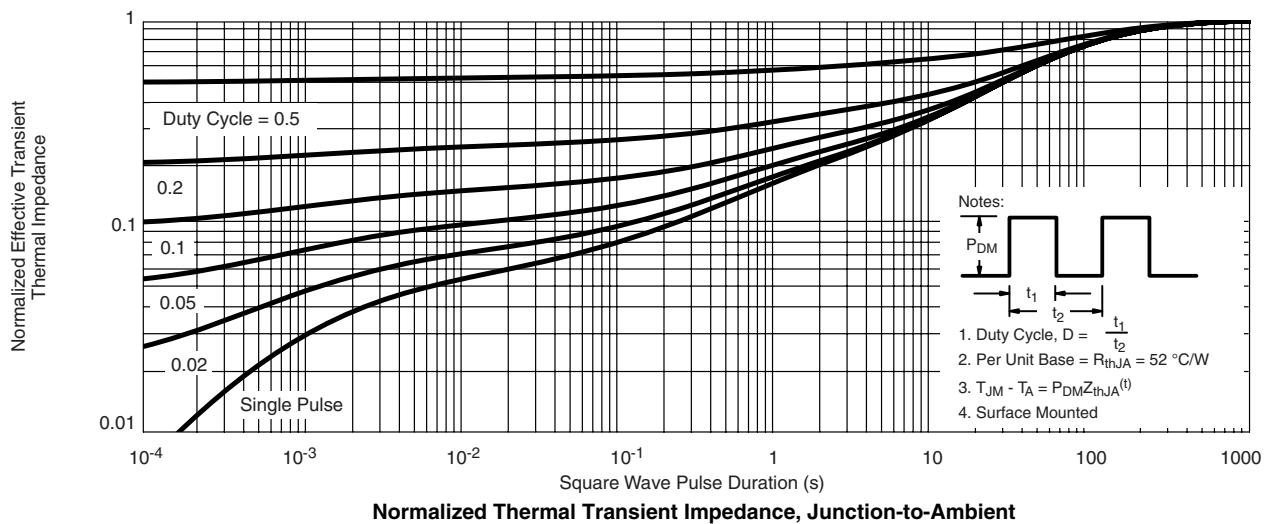
**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted

* $V_{GS} >$ minimum V_{GS} at which $r_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Case**Current Derating*, Junction-to-Ambient****Current Derating*, Junction-to-Case****Power Derating*, Junction-to-Case****Power Derating*, Junction-to-Ambient**

* The power dissipation P_D is based on $T_{J(max)} = 175^\circ\text{C}$, 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.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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