



New Product

SUY50N03-10CP
Vishay Siliconix

N-Channel 30-V (D-S), 175°C, MOSFET PWM Optimized

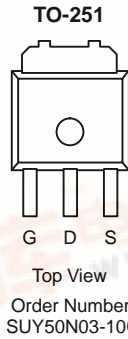
PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
30	0.010 @ $V_{GS} = 10$ V	15
	0.012 @ $V_{GS} = 4.5$ V	18

FEATURES

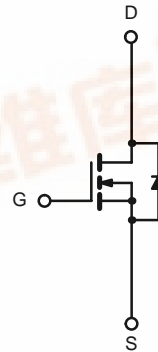
- TrenchFET® Power MOSFETS
- PWM Optimized for High Efficiency

APPLICATIONS

- Buck Converter
 - High Side
 - Low Side
- Synchronous Rectifier
 - Secondary Rectifier



- Notes:
1. Drain Connected to Tab
 2. Leads Trimmed to 0.092" ± 0.003"



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	15
		$T_A = 100^\circ\text{C}$	14
Pulsed Drain Current	I_{DM}	100	A
Continuous Source Current (Diode Conduction) ^a	I_S	20	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	71 ^b
		$T_A = 25^\circ\text{C}$	8.3 ^a
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	15	$^\circ\text{C}/\text{W}$
		Steady State	40	
Maximum Junction-to-Case	R_{thJC}	1.75	2.1	

Notes:
^a Surface mounted on 1" x 1" FR4 Board, $t \leq 10$ sec.
^b See SOA curve for voltage derating.



MOSFET SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 175 °C			150	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 15 A		0.008	0.010	Ω
		V _{GS} = 10 V, I _D = 15 A, T _J = 125 °C			0.016	
		V _{GS} = 10 V, I _D = 15 A, T _J = 175 °C			0.020	
		V _{GS} = 4.5 V, I _D = 15 A		0.0105	0.012	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 15 A	20	60		S
Dynamic^b						
Input Capacitance	C _{iSS}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1725		pF
Output Capacitance	C _{oss}			425		
Reverse Transfer Capacitance	C _{rSS}			120		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 15 A		13	18	nC
Gate-Source Charge ^c	Q _{gs}			4.5		
Gate-Drain Charge ^c	Q _{gd}			4.0		
Gate Resistance	R _G			1.7		Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 15 V, R _L = 1 Ω I _D = 15 A, V _{GEN} = 10 V, R _G = 6 Ω		10	15	ns
Rise Time ^c	t _r			160	240	
Turn-Off Delay Time ^c	t _{d(off)}			30	45	
Fall Time ^c	t _f			55	85	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _S				15	A
Pulsed Current	I _{SM}				100	
Forward Voltage ^a	V _{SD}	I _F = 15 A, V _{GS} = 0 V		0.85	12	V
Reverse Recovery Time	t _{rr}	I _F = 15 A, di/dt = 100 A/μs		80	110	ns

Notes:

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

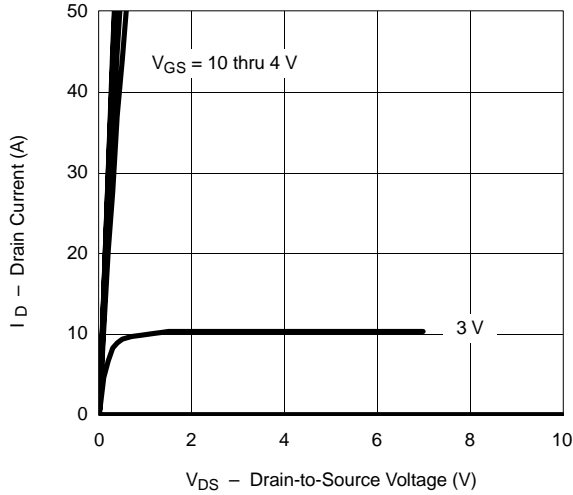


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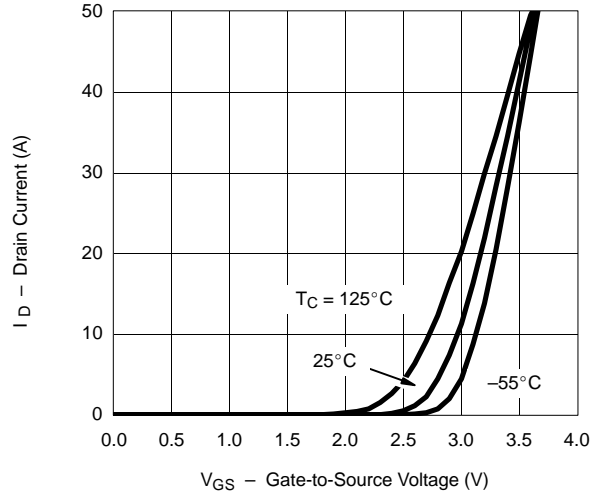
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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

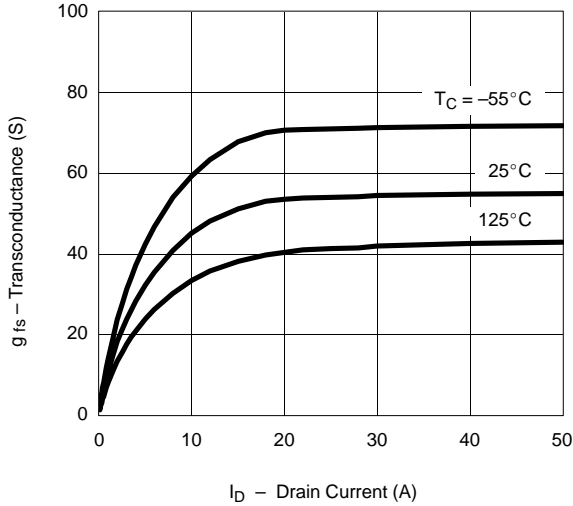
Output Characteristics



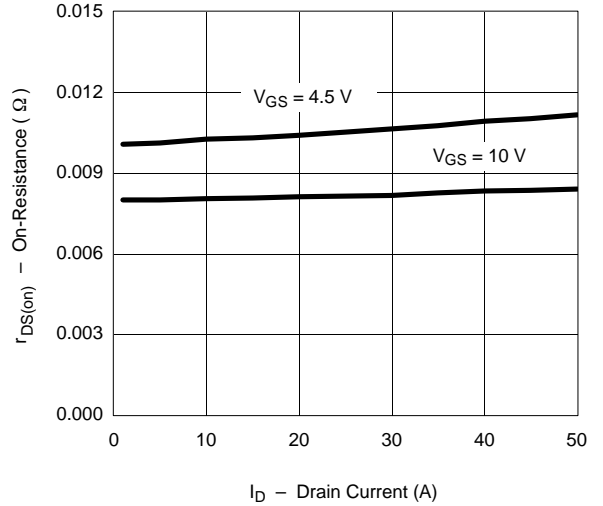
Transfer Characteristics



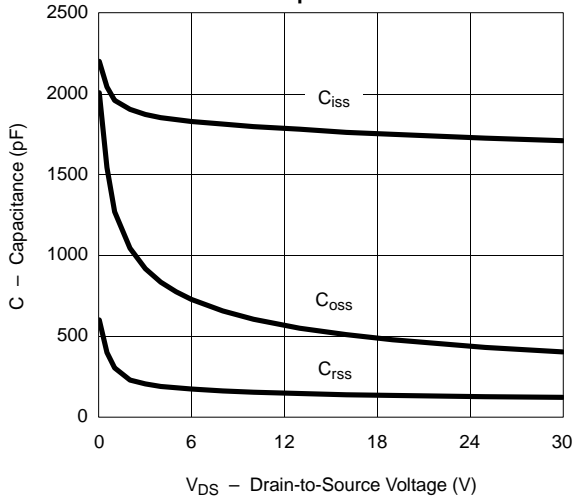
Transconductance



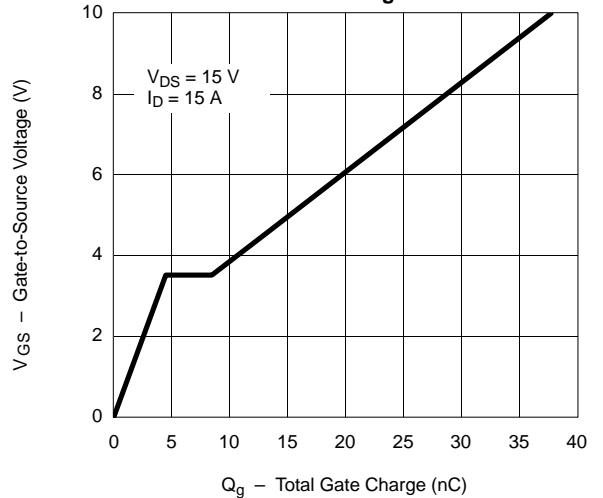
On-Resistance vs. Drain Current



Capacitance



Gate Charge



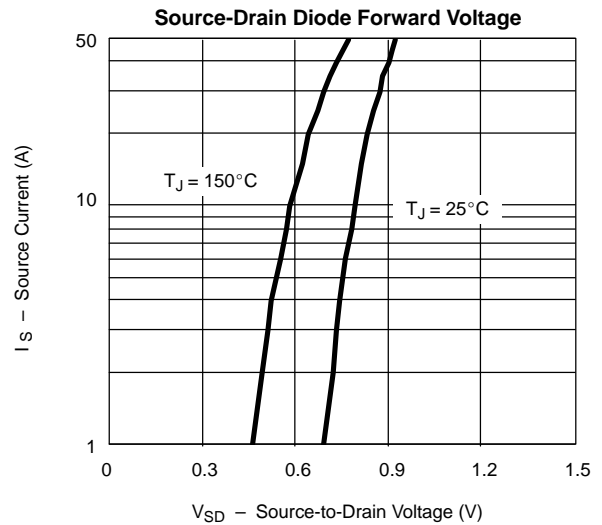
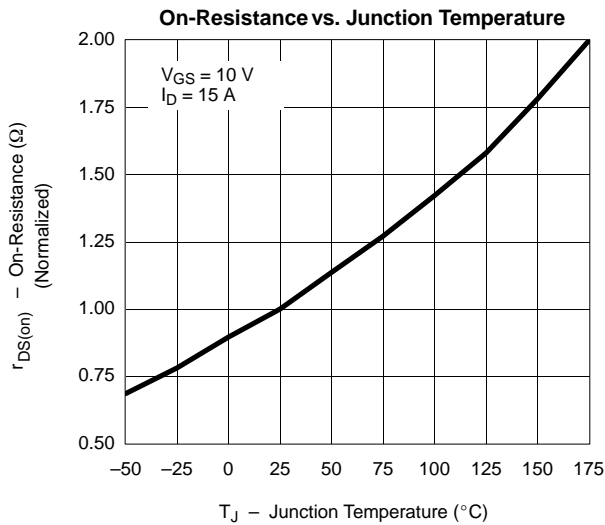
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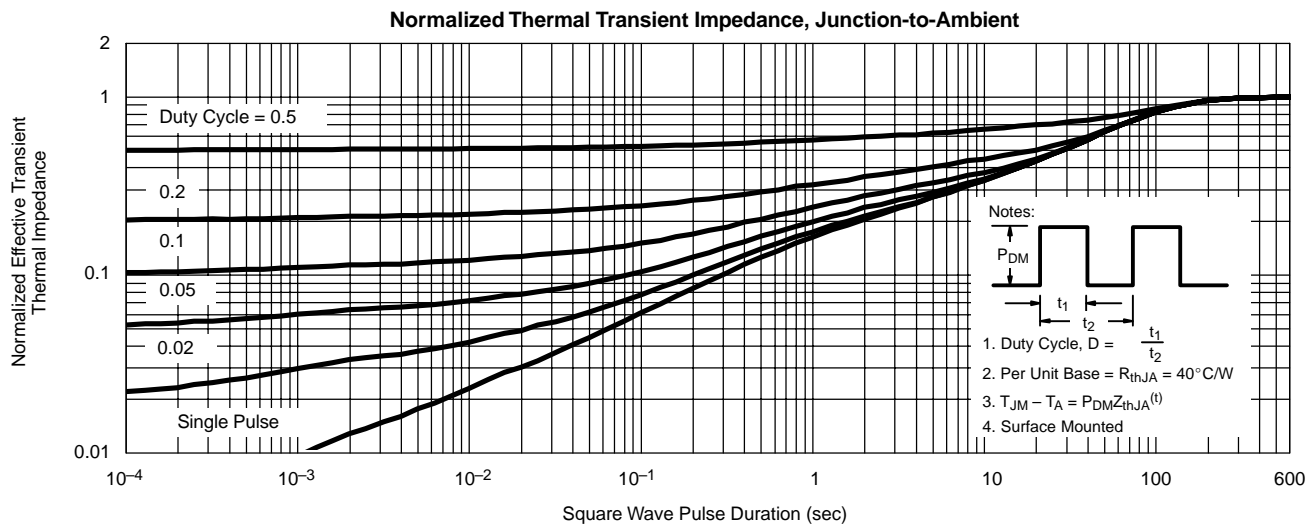
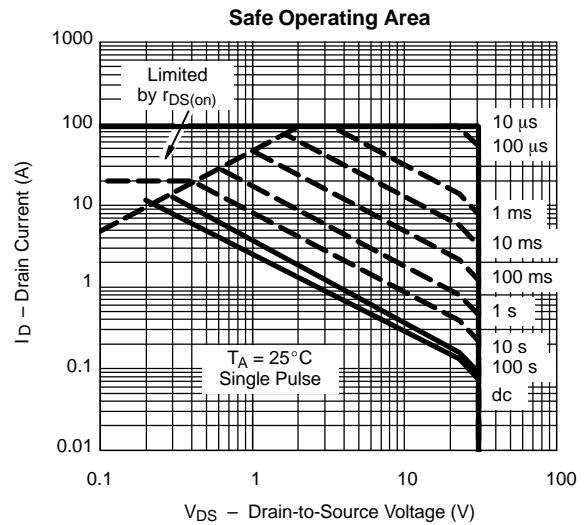
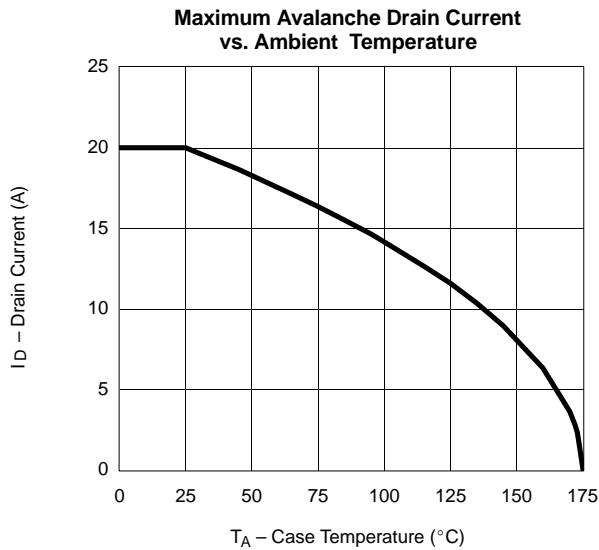
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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS





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