

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Vishay/Siliconix](#)
[SUP85N03-04P-E3](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



SUP/SUB85N03-04P
Vishay Siliconix

N-Channel 30-V (D-S) 175 °C MOSFET

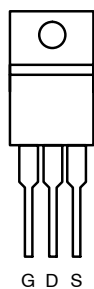
PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
30	0.0043 @ $V_{GS} = 10$ V	85 ^a
	0.007 @ $V_{GS} = 4.5$ V	85 ^a

FEATURES

- TrenchFET® Power MOSFET
- 175 °C Maximum Junction Temperature
- TO-263 (D²PAK) 100% R_g Tested

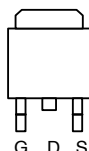
TO-220AB



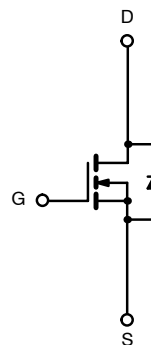
Top View
 SUP85N03-04P

DRAIN connected to TAB

TO-263
 (D²PAK)



Top View
 SUB85N03-04P



N-Channel MOSFET

Ordering Information: SUP85N03-04P (TO-220AB)
 SUB85N03-04P (TO-263, D²PAK)
 SUB85N03-04P—E3 (TO-263, D²PAK, Lead Free)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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 °C)	I_D	T _C = 25 °C	85 ^a
		T _C = 100 °C	85 ^a
Pulsed Drain Current	I_{DM}	240	A
Avalanche Current	I_{AR}	75	
Repetitive Avalanche Energy ^b	E_{AR}	L = 0.1 mH	280
Maximum Power Dissipation ^b		T _C = 25 °C (TO-220AB and TO-263)	166 ^c
	T _A = 25 °C (TO-263) ^d	3.75	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Junction-to-Ambient	R_{thJA}	PCB Mount (TO-263) ^d	40
		Free Air (TO-220AB)	62.5
Junction-to-Case	R_{thJC}	0.9	°C/W

Notes

- Package limited.
- Duty cycle ≤ 1%.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR-4 material).



SUP/SUB85N03-04P

Vishay Siliconix

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 _{DS} = 0 V, I _D = 250 μA	30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1	2	3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	120			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.0035	0.0043	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C			0.0065	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C			0.008	
		V _{GS} = 4.5 V, I _D = 20 A		0.0055	0.007	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	30			S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		4500		pF
Output Capacitance	C _{oss}			1380		
Reverse Transfer Capacitance	C _{rss}			615		
Gate Resistance ^d	R _g		0.7		3.8	Ω
Total Gate Charge ^b	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 85 A		71	90	nC
Gate-Source Charge ^b	Q _{gs}			15		
Gate-Drain Charge ^b	Q _{gd}			16		
Turn-On Delay Time ^b	t _{d(on)}	V _{DD} = 15 V, R _L = 0.18 Ω I _D ≅ 85 A, V _{GEN} = 10 V, R _g = 2.5 Ω		15	23	ns
Rise Time ^b	t _r			12	18	
Turn-Off Delay Time ^b	t _{d(off)}			50	75	
Fall Time ^b	t _f			22	35	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^c						
Continuous Current	I _S				85	A
Pulsed Current	I _{SM}				240	
Forward Voltage ^a	V _{SD}	I _F = 85 A, V _{GS} = 0 V		1.1	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 85 A, di/dt = 100 A/μs		42	70	ns
Peak Reverse Recovery Current	I _{RM}			1.4	2.1	A
Reverse Recovery Charge	Q _{rr}			0.03	0.06	μC

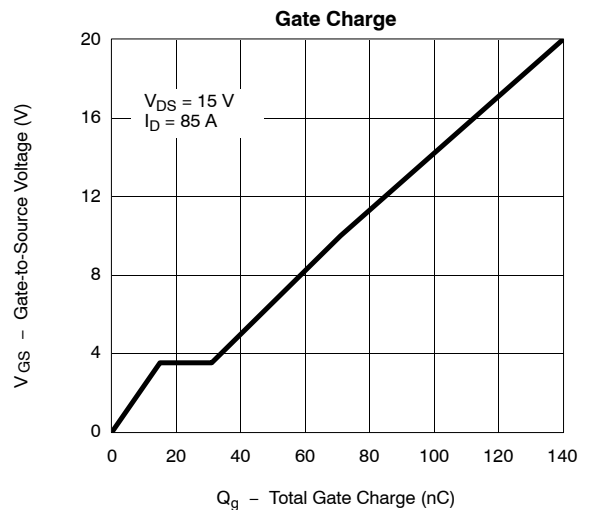
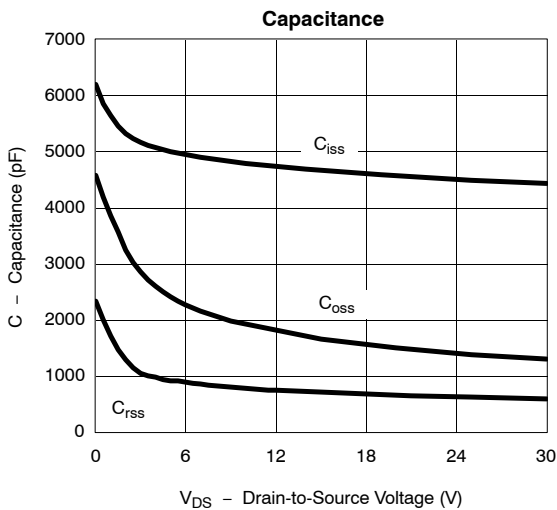
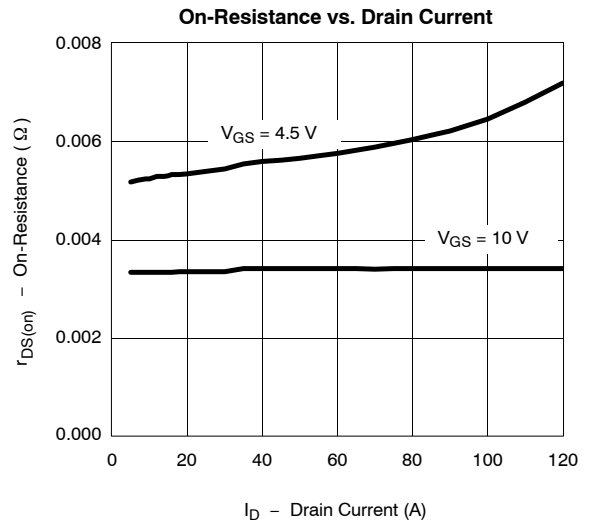
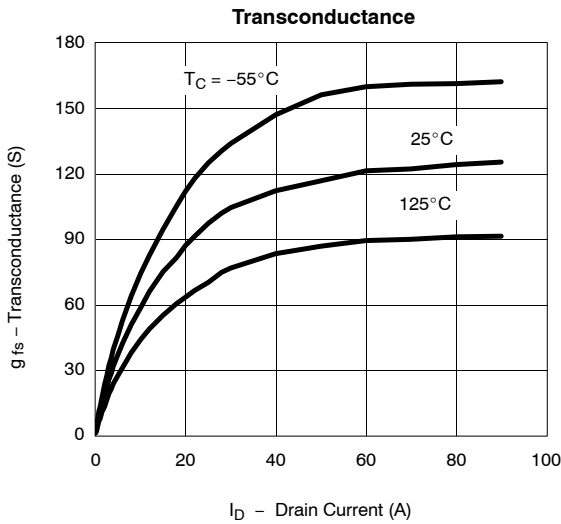
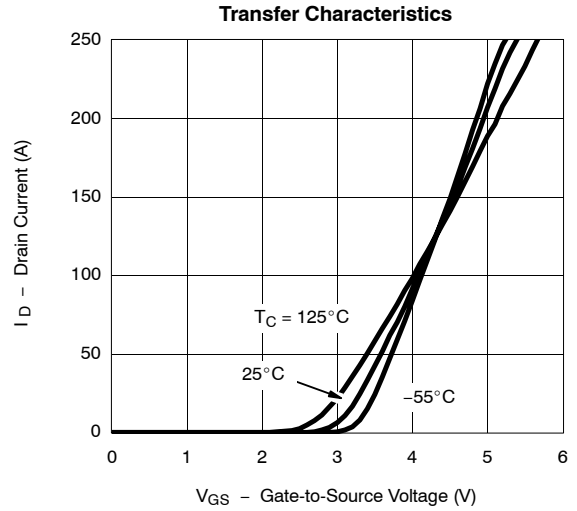
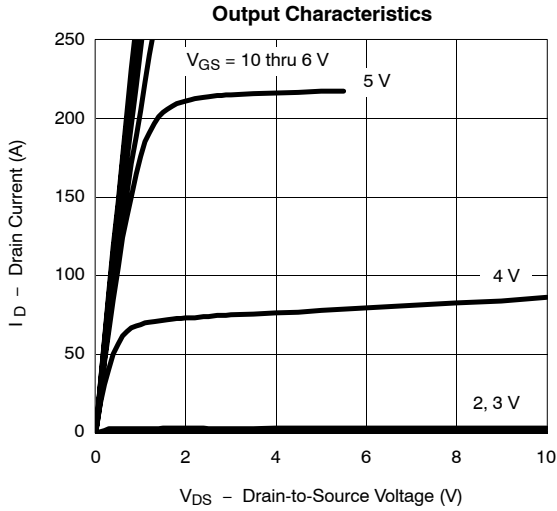
Notes

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.
- Guaranteed by design, not subject to production testing.
- TO-263 (D²PAK) only.



SUP/SUB85N03-04P
Vishay Siliconix

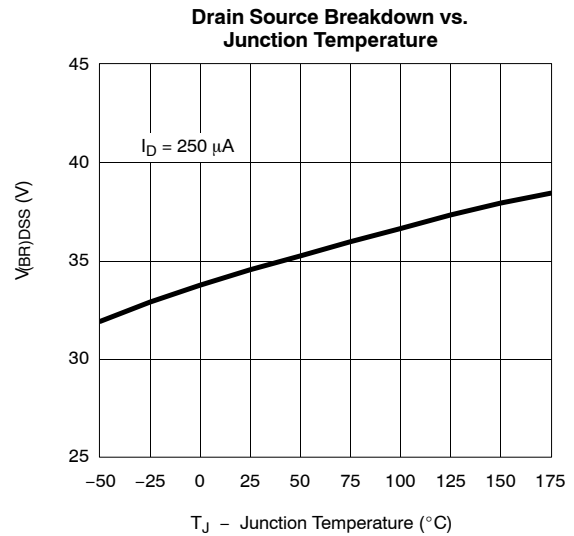
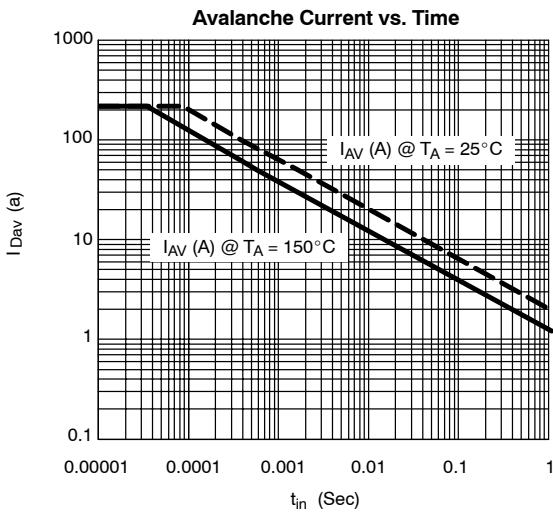
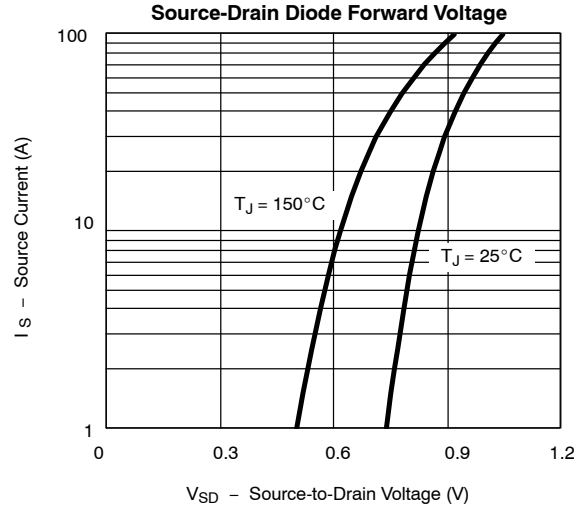
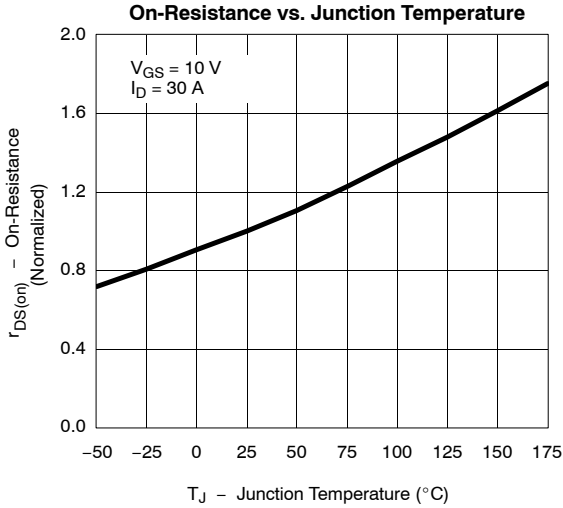
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





SUP/SUB85N03-04P
Vishay Siliconix

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

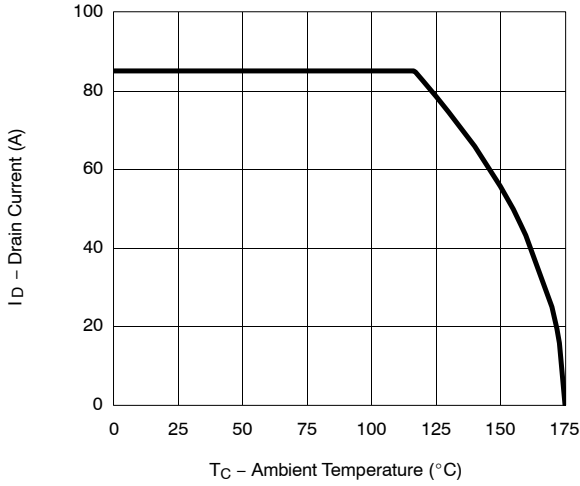




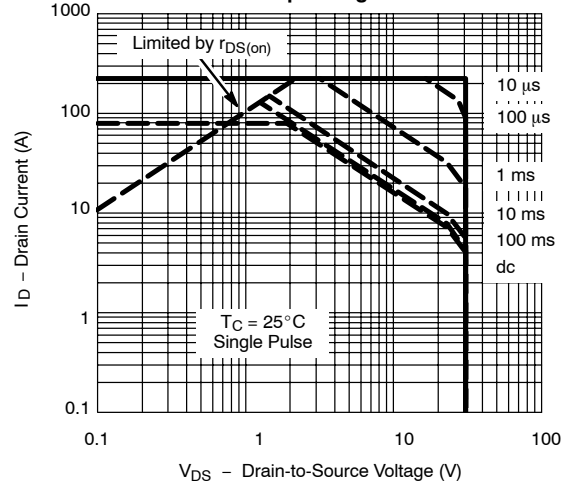
SUP/SUB85N03-04P
Vishay Siliconix

THERMAL RATINGS

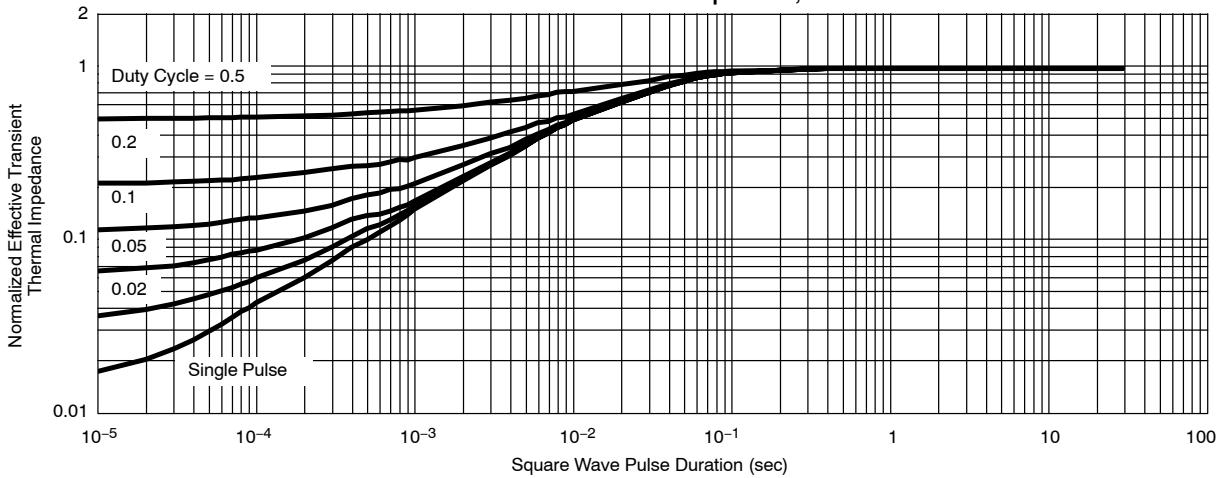
Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case





Legal Disclaimer Notice

Vishay

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.