



P-Channel 80 V (D-S) MOSFET

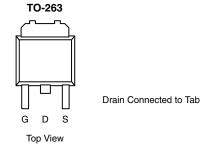
PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A) ^b	Q _g (Typ)			
- 80	0.0112 at V _{GS} = - 10 V	- 110	85 nC			
	0.0145 at V _{GS} = - 4.5 V	- 109	00 110			

FEATURES

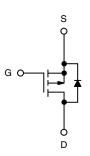
TrenchFET[®] Power MOSFET



Material categorization:
For definitions of compliance please see www.vishav.com/doc?99912







P-Channel MOSFET

ABSOLUTE MAXIMUM RATING	S (T _A = 25 °C, unle	ss otherwise no	ted)	
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	- 80	V
Gate-Source Voltage		V _{GS}	± 20	¬
	T _C = 25 °C		- 110 ^a	
Continuous Drain Current /T 175 °C)	T _C = 125 °C		- 71	
Continuous Drain Current (T _J = 175 °C)	T _A = 25 °C	I _D	- 23.5 ^{b, c}	
	T _A = 125 °C		- 13.6 ^{b, c}	A
Pulsed Drain Current		I _{DM}	- 120	
	T _C = 25 °C	1	- 110	
Continuous Source-Drain Diode Current	T _A = 25 °C	I _S	- 9 ^{b, c}	
Avalanche Current	L = 0.1 mH	I _{AS}	- 75	
Single-Pulse Avalanche Energy	L=0.1 IIII	E _{AS}	281	mJ
	T _C = 25 °C		375	
Mariana Parray Discipation	T _C = 125 °C	ь 🗆	125	10/
Maximum Power Dissipation	T _A = 25 °C	P _D	13.6 ^{b, c}	W
	T _A = 125 °C		4.5 ^{b, c}	
Operating Junction and Storage Temperature R	T _J , T _{stg}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{b, d}	t ≤ 10 s	R _{thJA}	8	11	°C/W	
Maximum Junction-to-Case (Drain)	Steady State	R _{thJC}	0.33	0.4	C/VV	

Notes

- a. Package limited.
- b. Surface mounted on 1" x 1" FR4 board.
- c. t = 10 s.
- d. Maximum under steady state conditions is 40 °C/W.

Document Number: 73471 S12-3071-Rev. C, 24-Dec-12 For technical questions, contact: $\underline{pmostechsupport@vishay.com}$

SUM110P08-11L

Vishay Siliconix



Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static					•		
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$	- 80			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = - 1 μA		- 85		mV/°C	
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	η Ι _D = - 1 μΑ		- 5.5			
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	- 1		- 3	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zana Oaka Valla va Busin Oamani		V _{DS} = - 80 V, V _{GS} = 0 V			- 1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 80 V, V _{GS} = 0 V, T _J = 175 °C			- 500	μΑ	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 10 \text{ V}, V_{GS} = -10 \text{ V}$	- 120			Α	
	_	V _{GS} = - 10 V, I _D = - 20 A		0.0093	0.0112	Ω	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 4.5 V, I _D = - 15 A		0.0120	0.0145		
Forward Transconductance ^a	g _{fs}	V _{DS} = - 15 V, I _D = - 20 A		85		S	
Dynamic ^b	•			•	•		
Input Capacitance	C _{iss}			10850		pF	
Output Capacitance	C _{oss}	V _{DS} = - 40 V, V _{GS} = 0 V, f = 1 MHz		800			
Reverse Transfer Capacitance	C_{rss}			700			
Total Cata Charge	Qg	V _{DS} = - 40 V, V _{GS} = - 10 V, I _D = - 110 A	180 270		270		
Total Gate Charge				85	130	nC	
Gate-Source Charge	Q_{gs}	$V_{DS} = -40 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -110 \text{ A}$		35			
Gate-Drain Charge	Q_{gd}			42			
Gate Resistance	R_g	f = 1 MHz		3.6		Ω	
Turn-On Delay Time	t _{d(on)}			20	30		
Rise Time	t _r	V_{DD} = - 40 V, R_L = 0.36 Ω		330	500	ns	
Turn-Off Delay Time	t _{d(off)}	$I_D \cong -110 \text{ A}, V_{GEN} = -10 \text{ V}, R_g = 1 \Omega$		135	205		
Fall Time	t _f			550	825		
Drain-Source Body Diode Characteristic	s						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 110	Α	
Pulse Diode Forward Current ^a	I _{SM}				- 120		
Body Diode Voltage	V_{SD}	I _S = - 20 A		- 0.8	- 1.5	V	
Body Diode Reverse Recovery Time	t _{rr}			65	100	ns	
Body Diode Reverse Recovery Charge	Q _{rr}			135	205	nC	
Reverse Recovery Fall Time	t _a	$\frac{1}{1} = \frac{1}{2} = \frac{1}$		43			
Reverse Recovery Rise Time	t _b			22		ns	

Notes:

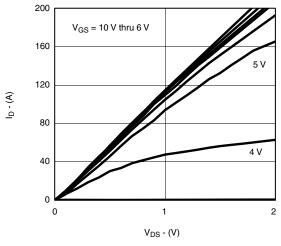
- a. Pulse test; pulse width \leq 300 μ s, duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.

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.

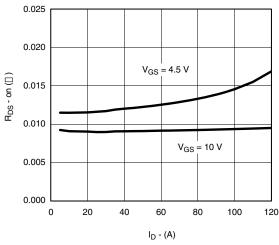


Vishay Siliconix

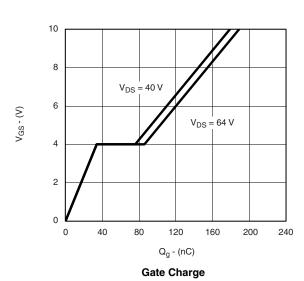
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

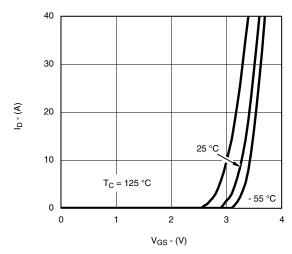


Output Characteristics

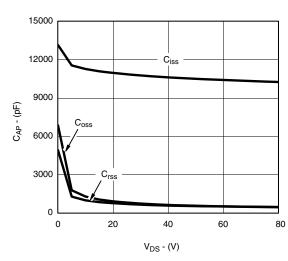


On-Resistance vs. Drain Current

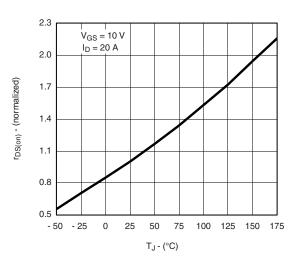




Transfer Characteristics



Capacitance



On-Resistance vs. Junction Temperature

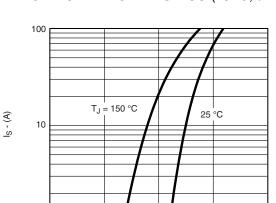
SUM110P08-11L

Vishay Siliconix

0

0.3

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

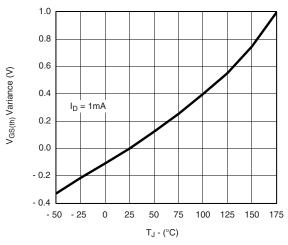


V_{SD} - (V) Source-Drain Diode Forward Voltage

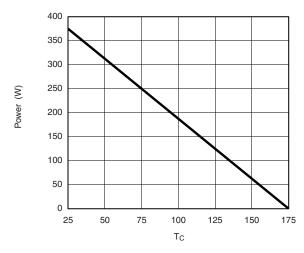
0.6

0.9

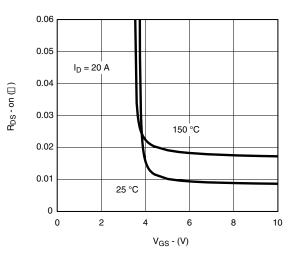
1.2



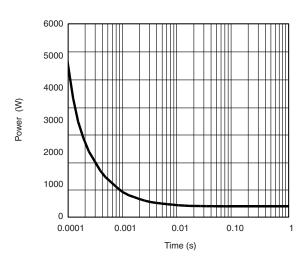
Threshold Voltage



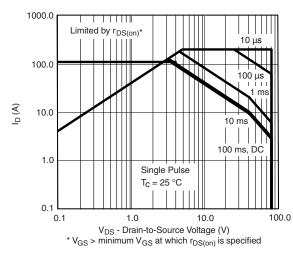
Power Derating, Junction-to-Case



On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Case (T_C = 25 °C)

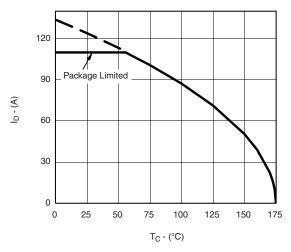


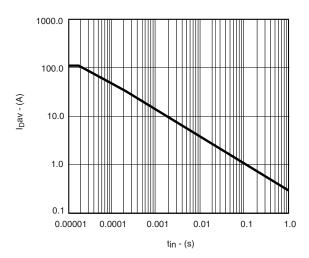
Safe Operating Area



Vishay Siliconix

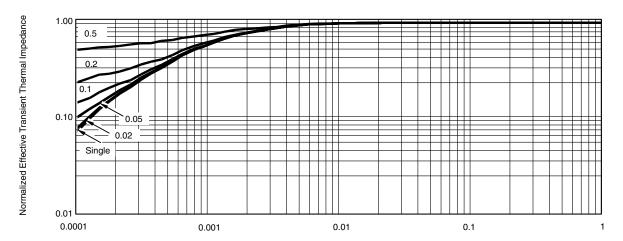
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)





Max. Avalanche and Drain Current vs. Case Temperature

Avalanche Current vs. Time

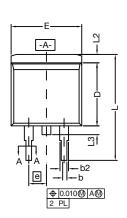


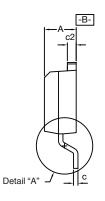
Normalized Thermal Transient Impedance, Junction-to-Case

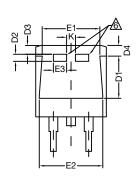
Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?73471.



TO-263 (D²PAK): 3-LEAD









DETAIL A (ROTATED 90°)



_	,	—b - -b	 			1
2	T			C	_ (<u>-</u>
	SE	^TIC	M	ا م		1

- 1. Plane B includes maximum features of heat sink tab and plastic.
- 2. No more than 25 % of L1 can fall above seating plane by max. 8 mils.
- 3. Pin-to-pin coplanarity max. 4 mils.
- 4. *: Thin lead is for SUB, SYB. Thick lead is for SUM, SYM, SQM.
- 5. Use inches as the primary measurement.

6 This feature is for thick lead.

DIM.		INC	HES	MILLIMETERS		
		MIN.	MAX.	MIN.	MAX.	
Α		0.160	0.190	4.064	4.826	
	b	0.020	0.039	0.508	0.990	
	b1	0.020	0.035	0.508	0.889	
	b2	0.045	0.055	1.143	1.397	
c*	Thin lead	0.013	0.018	0.330	0.457	
	Thick lead	0.023	0.028	0.584	0.711	
c1	Thin lead	0.013	0.017	0.330	0.431	
CI	Thick lead	0.023	0.027	0.584	0.685	
	c2	0.045	0.055	1.143	1.397	
	D	0.340	0.380	8.636	9.652	
	D1	0.220	0.240	5.588	6.096	
	D2	0.038	0.042	0.965	1.067	
	D3	0.045	0.055	1.143	1.397	
	D4	0.044	0.052	1.118	1.321	
	Е	0.380	0.410	9.652	10.414	
	E1	0.245	-	6.223	-	
E2		0.355	0.375	9.017	9.525	
	E3	0.072	0.078	1.829	1.981	
	е	0.100	BSC	2.54 BSC		
	K	0.045	0.055	1.143	1.397	
L		0.575	0.625	14.605	15.875	
L1		0.090	0.110	2.286	2.794	
	L2	0.040	0.055	1.016	1.397	
L3		0.050	0.070	1.270	1.778	
L4		0.010 BSC		0.254 BSC		
M		-	0.002	-	0.050	
ECN: T13-0707-Rev. K, 30-Sep-13						

DWG: 5843





RECOMMENDED MINIMUM PADS FOR D²PAK: 3-Lead



Recommended Minimum Pads Dimensions in Inches/(mm)

Return to Index



Legal Disclaimer Notice

Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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