

N-Channel 240 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)(Typ.)	I_D (A) ^a	Q_g (Typ.)
240	7.7 at $V_{GS} = 10$ V	0.11	2.1 nC
	9.07 at $V_{GS} = 4.5$ V		

FEATURES

- DT-Trench Power MOSFET
- 100 % R_g and UIS Tested

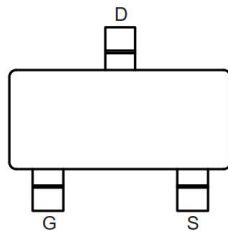
APPLICATIONS

- Power Management for Portable and Consumer
 - Load Switches
 - DC/DC Converters

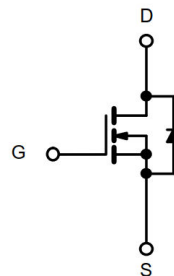


RoHS
COMPLIANT

SOT-23 Pin Configuration



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_J = 25$ °C, unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	240	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C)	I_D	$T_A = 25$ °C	A
		$T_A = 70$ °C	
Pulsed Drain Current	I_{DM}	0.4	
Maximum Power Dissipation ^a	P_D	$T_A = 25$ °C	W
		$T_A = 70$ °C	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Ambient (PCB Mount) ^b	R_{thJA}	347	°C/W

Notes:

a. $T_C = 25$ °C.

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

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

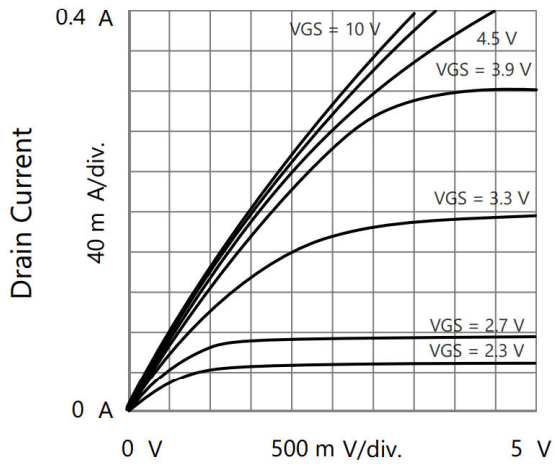
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	240	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.8	-	1.8	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 10	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 240 V, V _{GS} = 0 V	-	-	1	μA
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	0.1	-	-	A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 0.1 A	-	7.7	14	Ω
		V _{GS} = 4.5 V, I _D = 0.09 A	-	9.07	20	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 0.08 A	-	0.13	-	S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1MHz	-	58	-	pF
Output Capacitance	C _{oss}		-	7.3	-	
Reverse Transfer Capacitance	C _{rss}		-	2.8	-	
Total Gate Charge ^c	Q _g	V _{DS} = 192 V, V _{GS} = 10 V, I _D = 0.1 A	-	2.1	-	nC
Gate-Source Charge ^c	Q _{gs}		-	0.16	-	
Gate-Drain Charge ^c	Q _{gd}		-	0.8	-	
Gate Resistance	R _g	f = 1 MHz	-	2.4	-	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 120 V, I _D = 0.1 A, V _{GS} = 10 V, R _g = 6 Ω		3.3		ns
Rise Time	t _r			3.1		
Turn-Off DelayTime	t _{d(off)}			13.7		
Fall Time	t _f			64.5		
Drain-Source Body Diode Ratings and Characteristics ^b (T _C = 25 °C)						
Continuous Source Current	I _S	T _C = 25 °C	-	-	0.11	A
Pulsed Source Current	I _{SM}		-	-	0.4	A
Forward Voltage ^a	V _{SD}	I _S = 0.1 A, V _{GS} = 0 V	-	-	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I = 0.1 A, dI/dt = 100 A/μs, T = 25 °C		42.9		ns
Body Diode Reverse Recovery Charge	Q _{rr}			22.6		nC

Notes

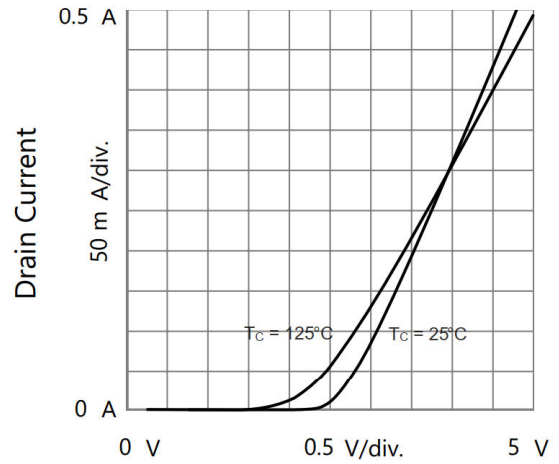
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.
 c. Independent of operating temperature.

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.

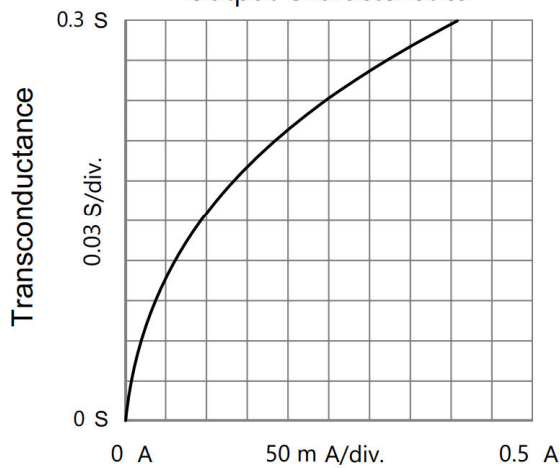
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Drain to Source Voltage
Output Characteristics

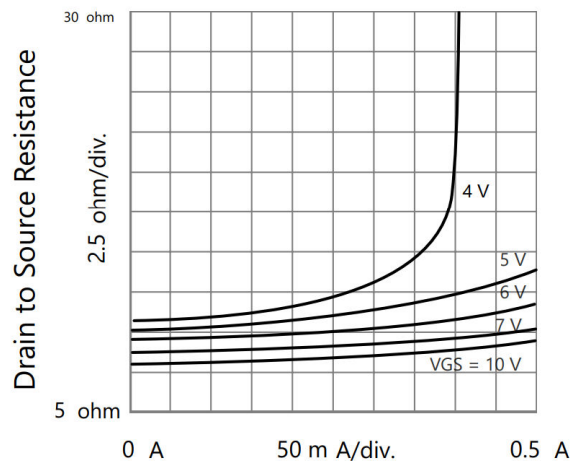


Gate to Source Voltage
Transfer Characteristics



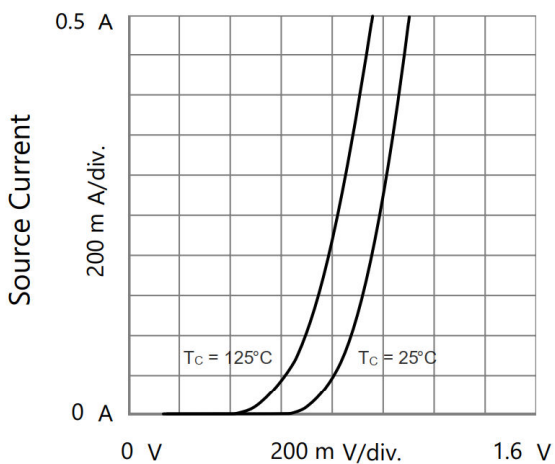
Drain Current

Drain to Source Resistance vs. Drain Current

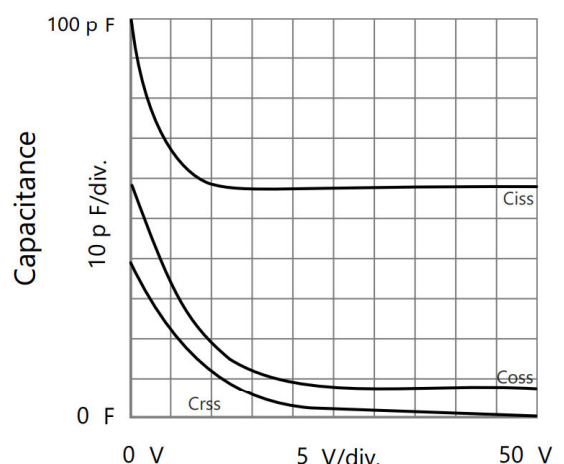


Drain Current

Drain to Source Resistance vs. Drain Current

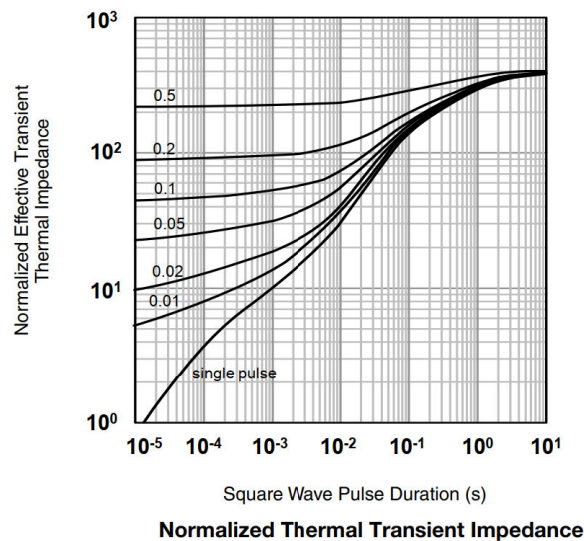
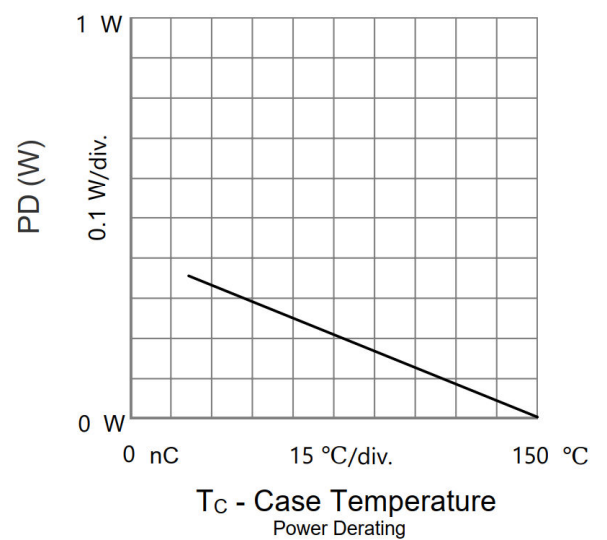
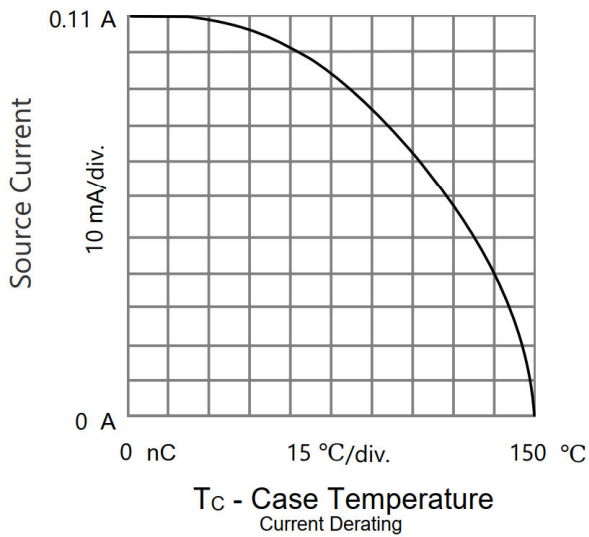
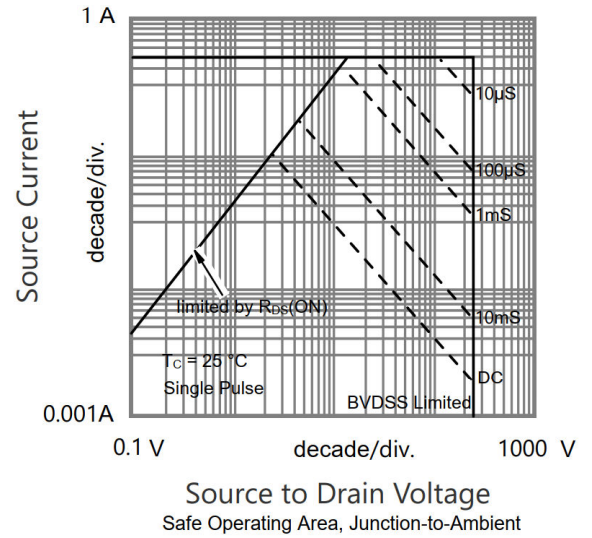
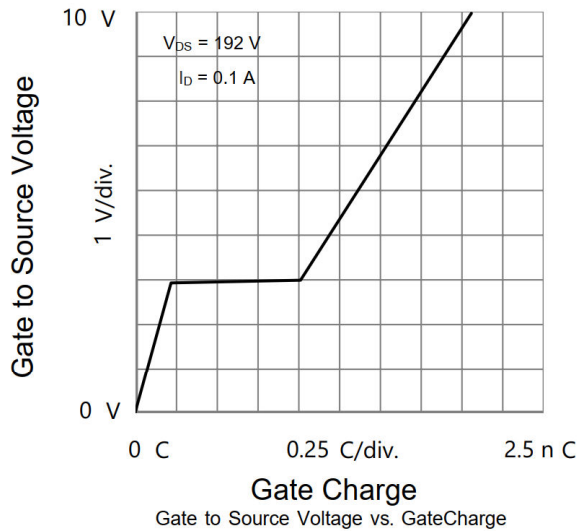


Source to Drain Voltage
Body Diode Forward Characteristics



Drain to Source Voltage
Capacitances

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



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