N-Channel 100 V (D-S) MOSFET

RoHS COMPLIANT

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ) (Typ.)	I_D (A)[a]	Q_g (Typ.)
100	12 at V_{GS} = 4.5 V	48	22.6 nC

FEATURES

- DT-Trench Power MOSFET
- 100 % Rg and UIS tested
- Low on-resistance RDS(on)

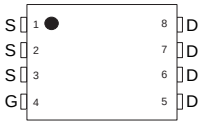
APPLICATIONS

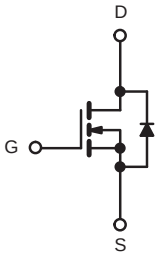
- Power switching application
- Ideal for high-frequency switching and synchronous rectification

DFN5X6-8L Pin Configuration

Top View

Top View





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C, unless otherwise noted)				
PARAMETER		**SYMBOL**	**LIMIT**	**UNIT**
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150 °C)[a]	T_C = 25 °C	I_D	48	A
	T_C = 100 °C		36	
Pulsed Drain Current[b]		I_{DM}	180	
Single Avalanche Energy		E_{AS}	178	mJ
Maximum Power Dissipation[c]	T_C = 25 °C	P_D	85	W
	T_C = 100 °C		34	
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)[d]	R_{thJA}	50	°C/W
Junction-to-Case (Drain)	R_{thJC}	1.47	

Notes

a. Calculated continuous current based on maximum allowable junction temperature.

b. Repetitive rating; pulse width limited by max. junction temperature.

c. Pd is based on max. junction temperature, using junction-case thermal resistance.

d. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper,in a still air environment with Ta=25 °C.

SPECIFICATIONS(T_C= 25 °C, unless otherwise noted)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0, I_D = 250 µA	100			V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	1		3	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 10 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100 V, V_{GS} = 0 V			1	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55 °C			50	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 10 V	48			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A		12	18	mΩ
Forward Transconductance[a]	g_{fs}	V_{DS} = 5 V,I_D = 20 A		45		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} = 50 V, V_{GS} = 0 V, f = 1 MHz		1340		pF
Output Capacitance	C_{oss}			328		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge[c]	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 20 A		22.6		nC
Gate-Source Charge[c]	Q_{gs}			3.1		
Gate-Drain Charge[c]	Q_{gd}			4.5		
Gate Resistance	R_g	f = 1 MHz		1.6		Ω
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = 15 V, I_D = 15 A, R_g = 3 Ω V_{GS} = 10 V		13		ns
Rise Time[c]	t_r			11.5		
Turn-Off DelayTime[c]	$t_{d(off)}$			22		
Fall Time[c]	t_f			8		
Drain-Source Body Diode Characteristics						
Continous Source-Drain Diode Current	I_S	T_C = 25 °C			48	A
Pulse Diode Forward Current	I_{SM}				180	
Body Diode Voltage[a]	V_{SD}	I_S = 1 A			1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = 20 A, dI/dt = 100 A/µs, T_J = 25 °C		28		ns
Body Diode Reverse Recovery Charge	Q_{rr}			100		nC

Notes:

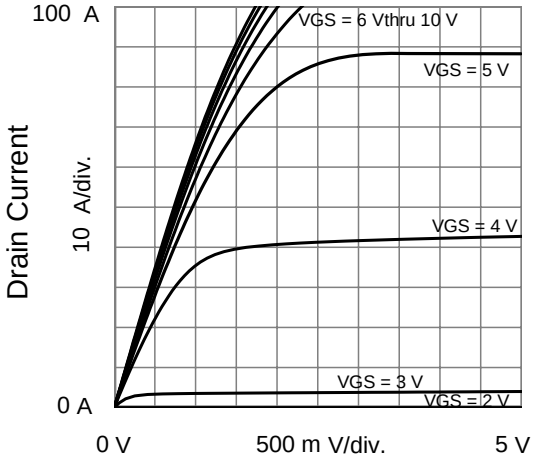
a. Pulse test; pulse width 300 µs, duty cycle 2 %.

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

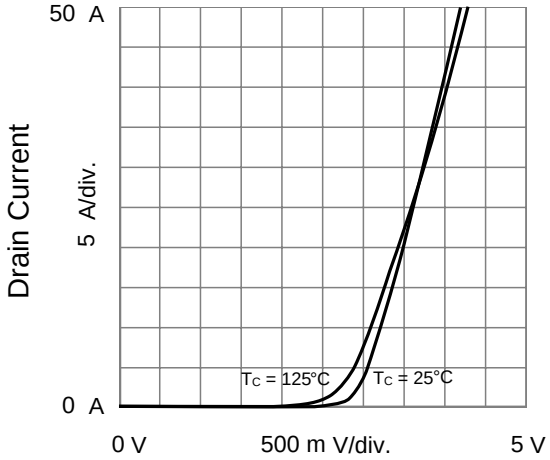
c. Independent of operating temperature.

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.

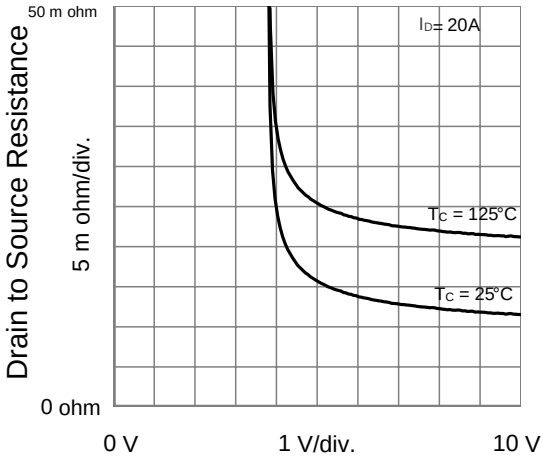
TYPICAL CHARAC TERISTICS (25 °C, unless otherwise noted)



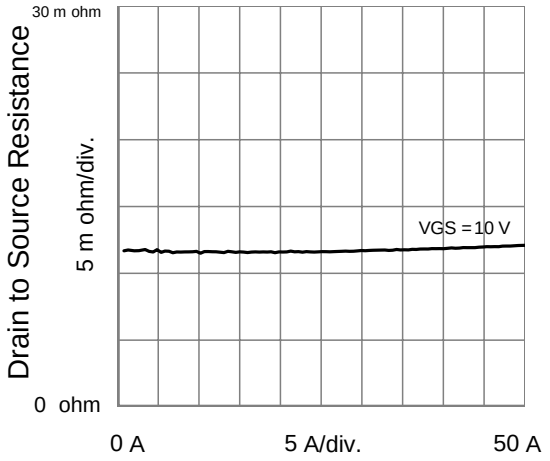
Drain to Source Voltage
Output Characteristics



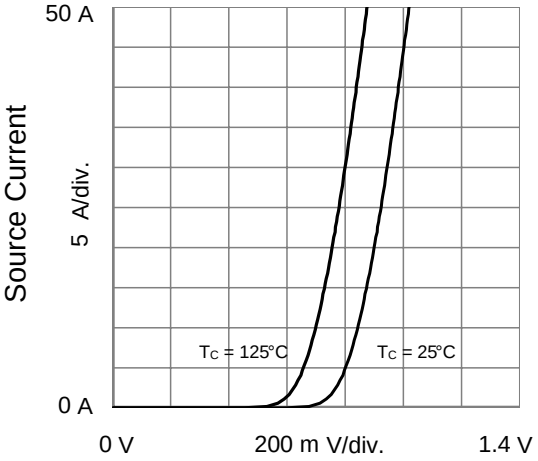
Gate to Source Voltage
Transfer Characteristics



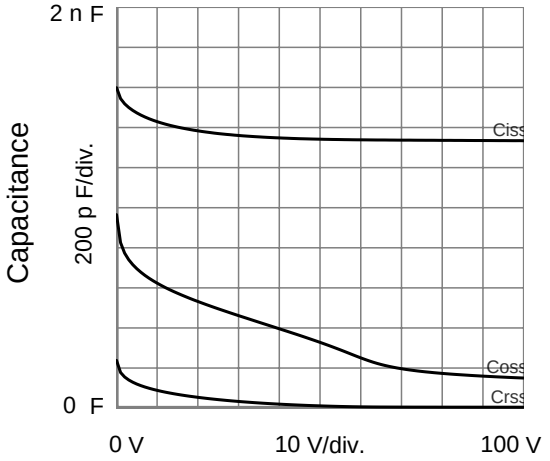
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltag



Drain Current

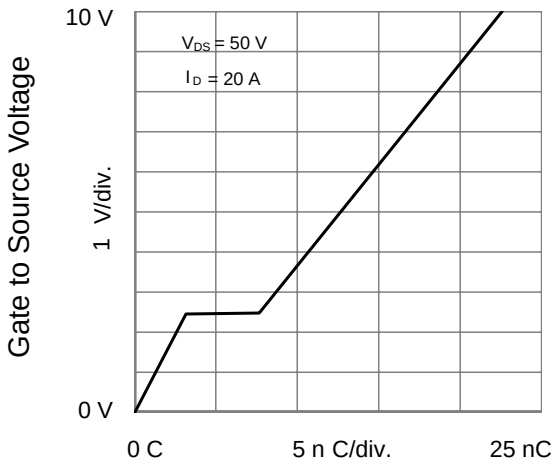


Source to Drain Voltage
Body Diode Forward Characteristics

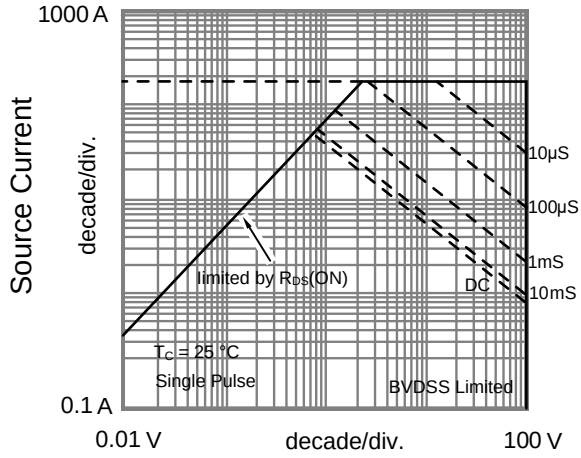


Drain to Source Voltage
Capacitances

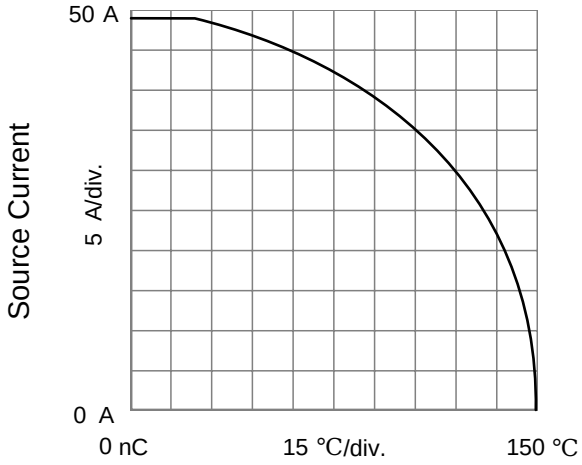
TYPICAL CHARAC TERISTICS (25 °C, unless otherwise noted)

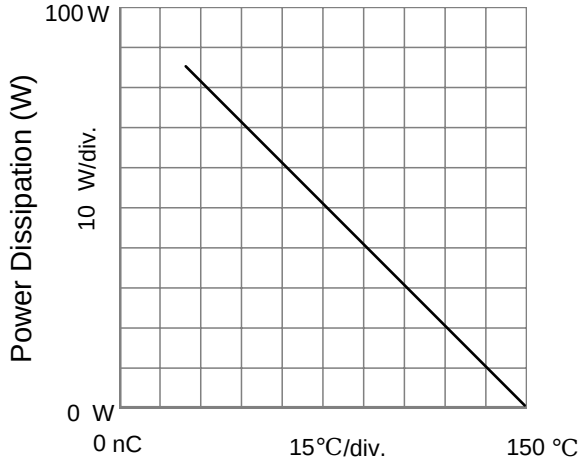


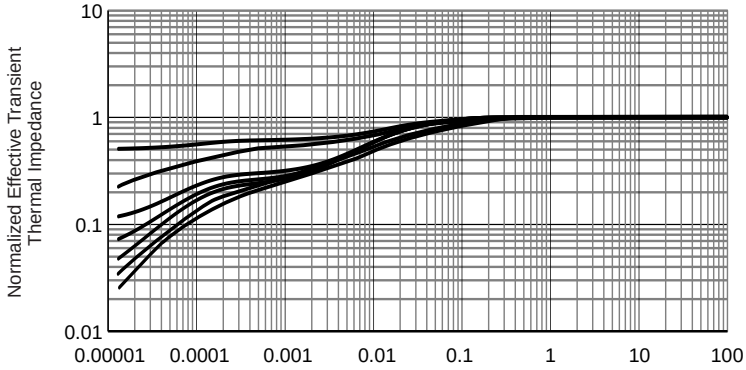
Gate to Source Voltage vs. GateCharge



Safe Operating Area, Junction-to-Case

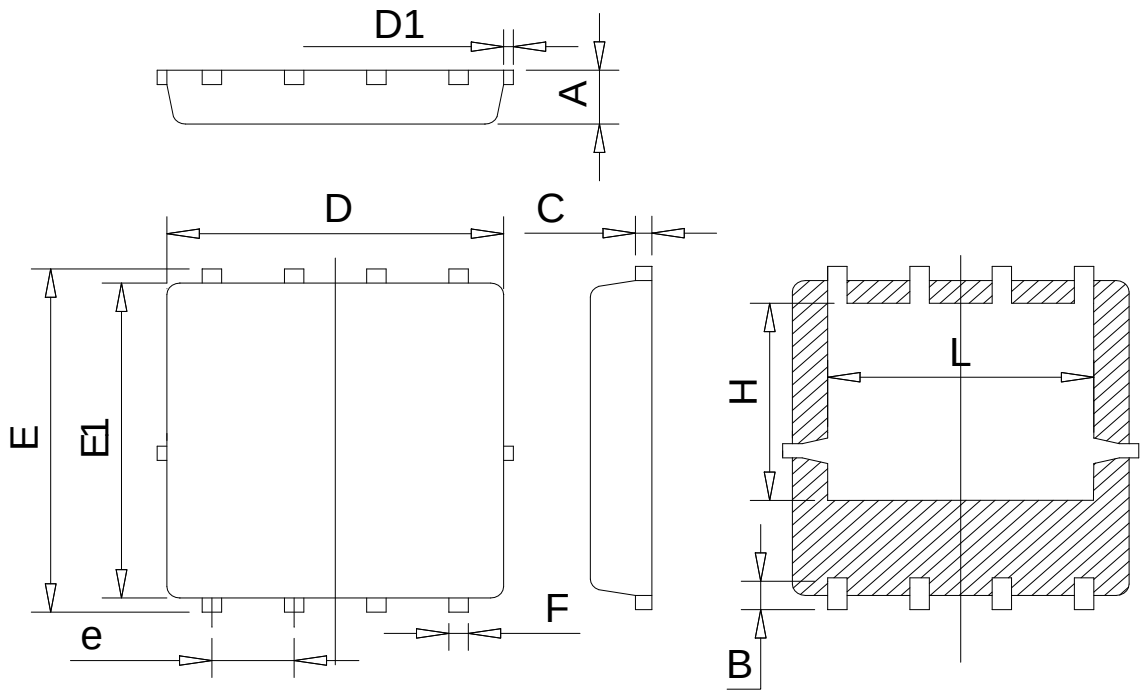






Normalized Thermal Transient Impedance, Junction-to-Case

DFN 5X6-8L PACKAGE OUTLINE



COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

Unit : mm

Symbol	Min	Typ	Max
A	0.78	0.95	1.12
B	0.45	0.58	0.78
C	0.18	0.254	0.36
D	4.70	5.20	5.45
D1			0.18
E	5.85	6.05	6.25
E1	5.38	5.55	5.98
e	1.15	1.27	1.40
F	0.18	0.30	0.52
H	3.25	3.47	3.70
L	3.75	4.00	4.25

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