

N-Channel 100 V (D-S) Super Junction MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (mΩ) (Typ.)	I _D (A) ^a	Q _g (Typ.)
100	6 at V _{GS} = 10 V	55	27 nC
	10.5 at V _{GS} = 4.5 V		

FEATURES

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

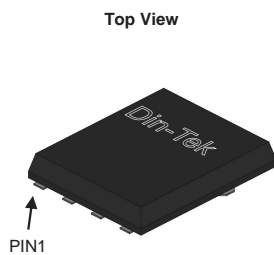
APPLICATIONS

- DC/DC Primary Side Switch
- Telecom/Server 48 V, Full/Half-Bridge DC/DC

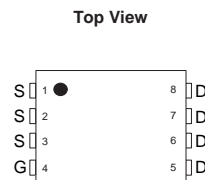


RoHS
COMPLIANT

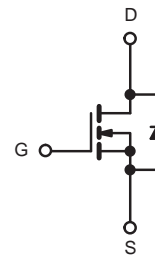
DFN5X6-8L Pin Configuration



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	I _D	T _C = 25 °C	55
		T _C = 100 °C	33
Pulsed Drain Current ^b	I _{DM}	200	A
Single Avalanche Energy	E _{AS}	355	mJ
Maximum Power Dissipation ^c	P _D	T _C = 25 °C	108
		T _C = 100 °C	62
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}	45	°C/W
Junction-to-Case (Drain)	R _{thJC}	1.15	

Notes

- Calculated continuous current based on maximum allowable junction temperature.
- Repetitive rating; pulse width limited by max. junction temperature.
- P_d is based on max. junction temperature, using junction-case thermal resistance.
- The value of R_{thJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.

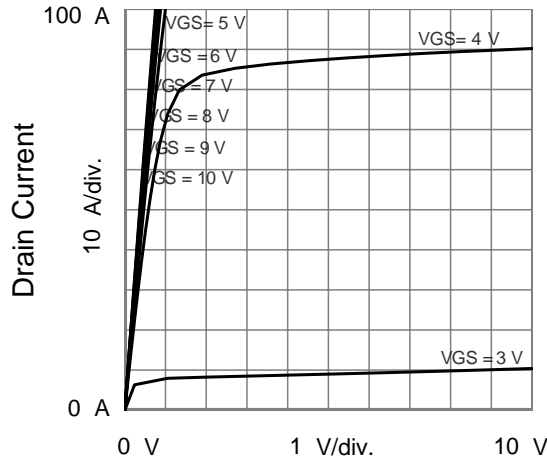
SPECIFICATIONS ($T_C = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0, I_D = 250\text{ }\mu\text{A}$	100			V
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1		3	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 10\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	55			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$		6	7.5	m Ω
		$V_{GS} = 4.5\text{ V}, I_D = 10\text{ A}$		10.5	15.9	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 5\text{ V}, I_D = 15\text{ A}$		65		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 50\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		2670		pF
Output Capacitance	C_{oss}			657		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge ^c	Q_g	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		48		nC
Gate-Source Charge ^c	Q_{gs}			5.7		
Gate-Drain Charge ^c	Q_{gd}			7.1		
Gate Resistance	R_g	$f = 1\text{ MHz}$		1.3		Ω
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 50\text{ V}, I_D = 10\text{ A},$ $R_g = 1\text{ }\Omega, V_{GS} = 10\text{ V}$		19		ns
Rise Time ^c	t_r			20		
Turn-Off Delay Time ^c	$t_{d(off)}$			33		
Fall Time ^c	t_f			16		
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$			55	A
Pulse Diode Forward Current	I_{SM}				200	
Body Diode Voltage ^a	V_{SD}	$I_S = 1\text{ A}$			1	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		56		ns
Body Diode Reverse Recovery Charge	Q_{rr}				38	

Notes:

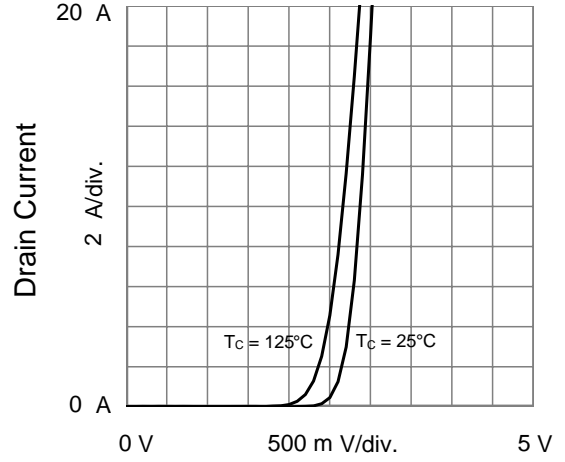
- Pulse test; pulse width 300 μs , duty cycle 2 %.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

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.

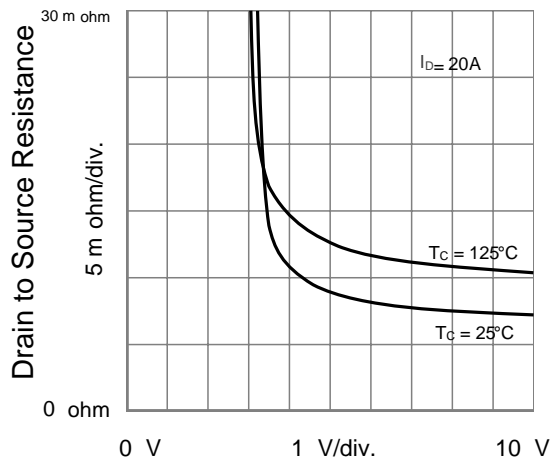
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



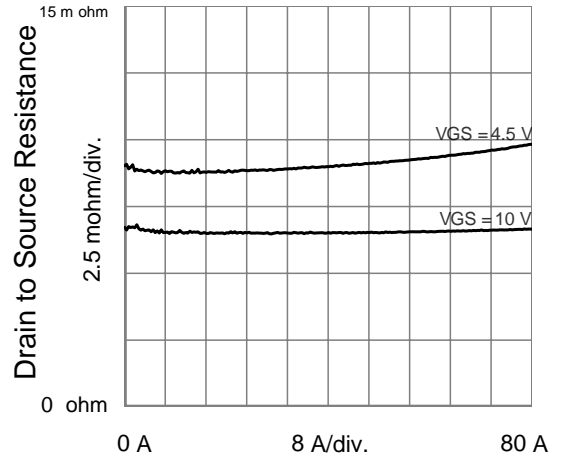
Drain to Source Voltage Output Characteristics



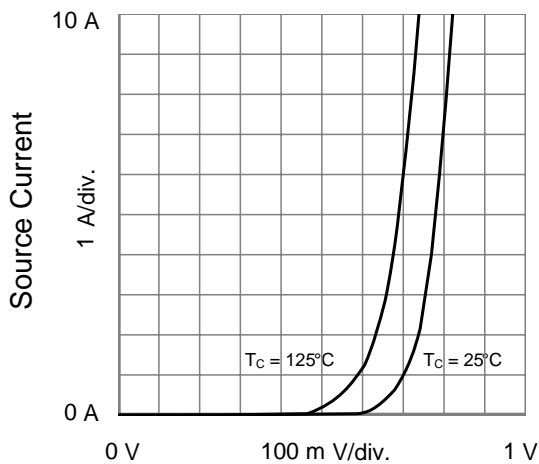
Gate to Source Voltage Transfer Characteristics



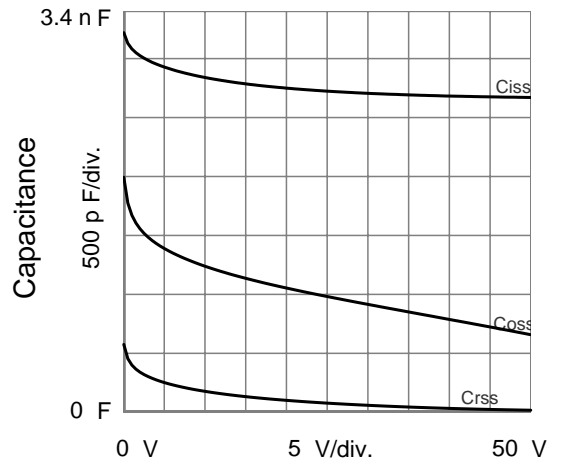
Gate to Source Voltage Drain to Source Resistance vs. Gate to Source Voltage



Drain Current

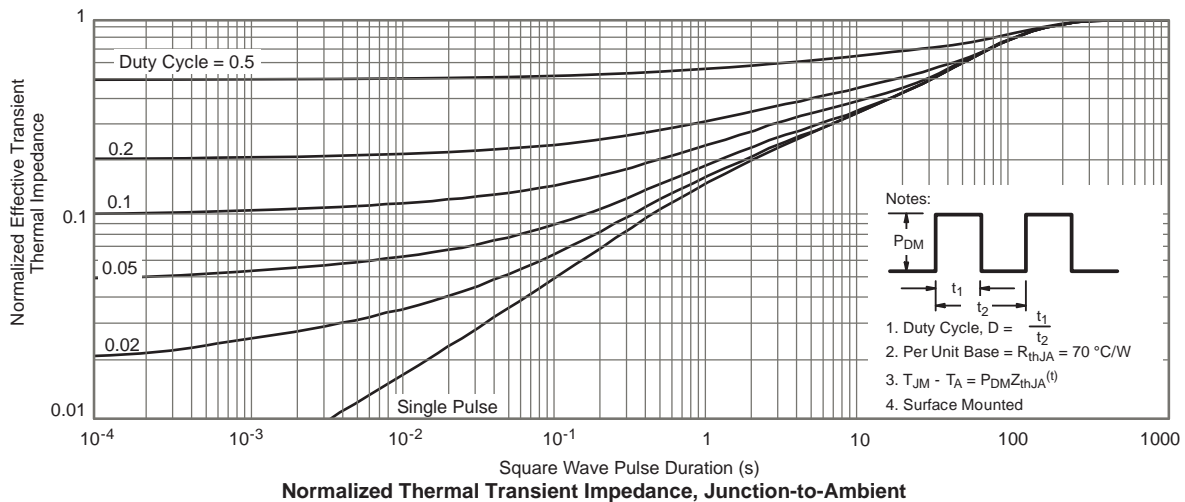
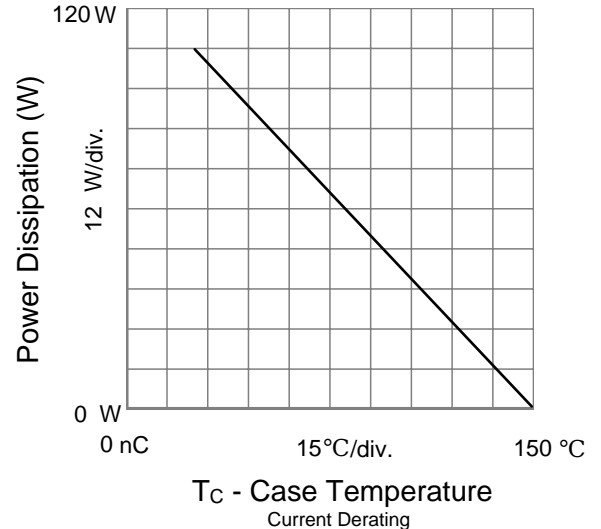
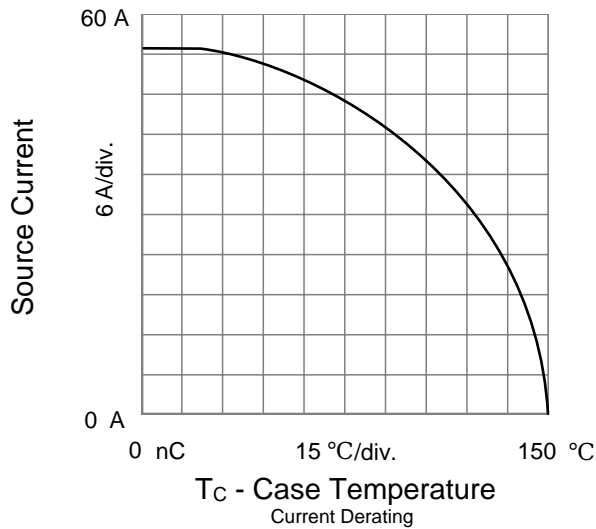
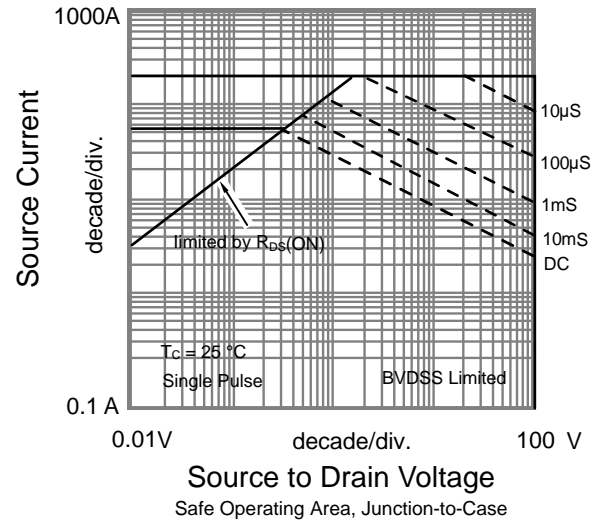
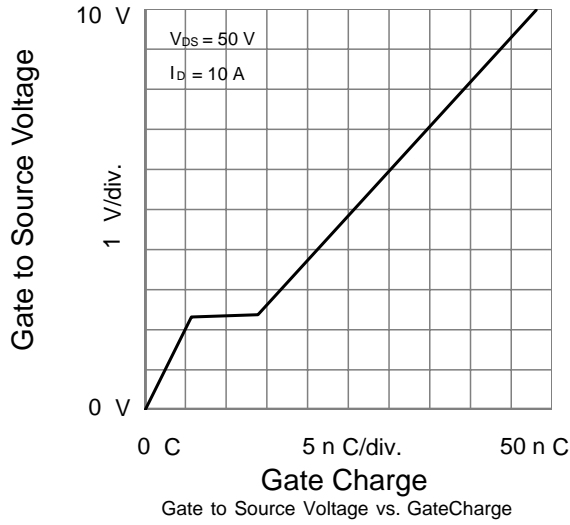


Source to Drain Voltage Body Diode Forward Characteristics

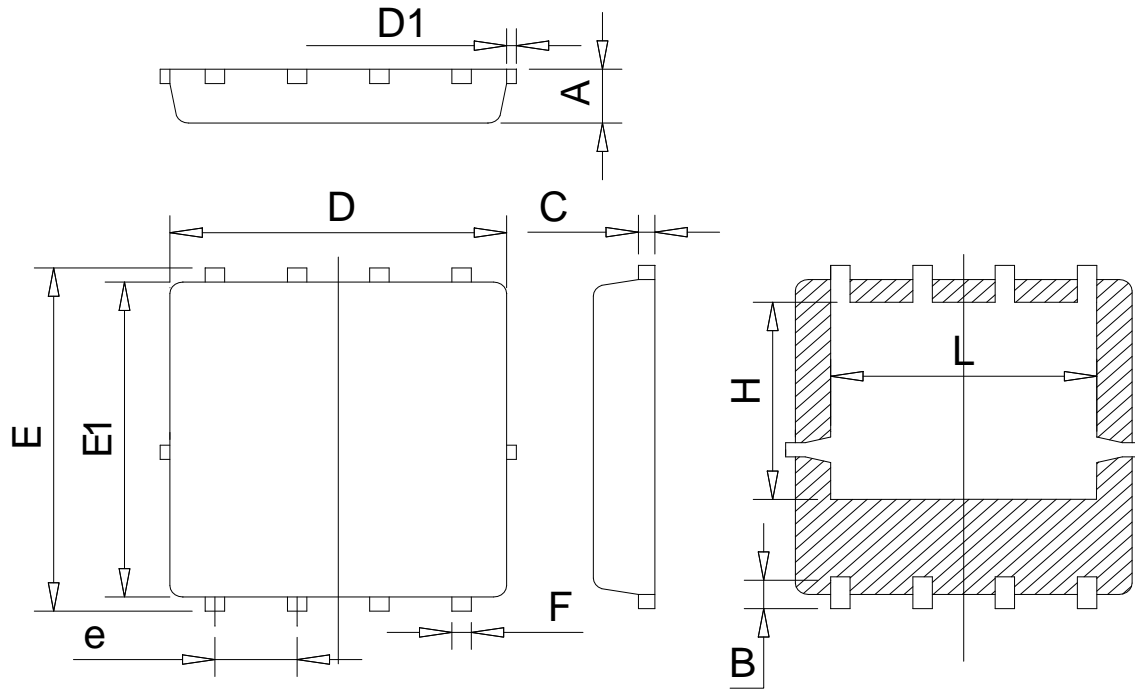


Drain to Source Voltage Capacitances

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



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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