

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

PRODUCT SUMMARY

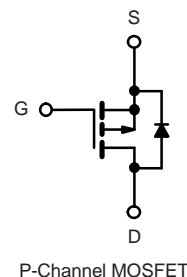
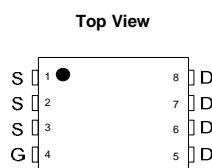
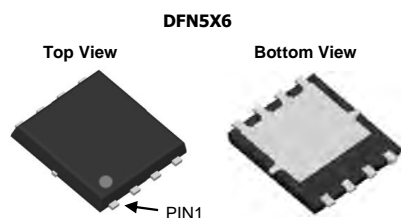
V_{DS} (V)	$R_{DS(on)}$ (m Ω)(Typ.)	I_D (A) ^a	Q_g (Typ.)
- 100	36 at $V_{GS} = - 10$ V	- 35	46 nC
	45 at $V_{GS} = - 4.5$ V		

FEATURES

- DT-SJ Power MOSFET
- 100 % R_g and UIS Tested
- Very low on-resistance $R_{DS(on)}$

APPLICATIONS

- PWM Applications
- Load Switch
- Power Management


RoHS
 COMPLIANT


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	I_D	- 35	A
		- 21	
Continuous Source Current (Diode Conduction)	I_S	- 35	
Pulsed Drain Current ^a	I_{DM}	- 140	
Single Pulse Avalanche Energy	E_{AS}	330	mJ
Maximum Power Dissipation ^b	P_D	95	W
		48	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	°C

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Case (Drain) ^{c,d}	R_{thJC}	1.32	°C/W

Notes:

- $T_C = 25$ °C.
- Surface mounted on 1" x 1" FR4 board.
- $t = 10$ s.
- Maximum under steady state conditions is 2.5 °C/W.

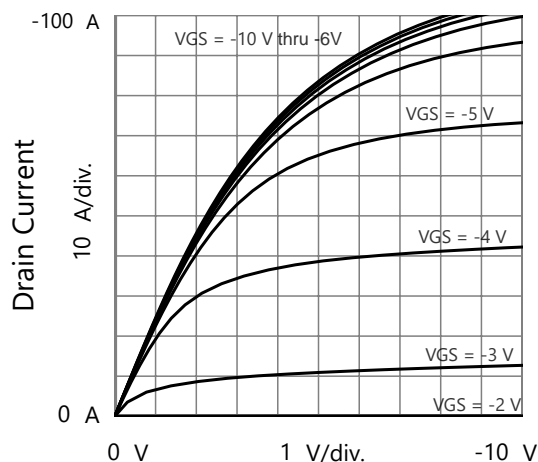
SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min .	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = -250 μA	- 100			V
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	- 1		- 3	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -100V, V _{GS} = 0 V			1	μA
		V _{DS} = -80V, V _{GS} = 0 V, T _J = 55 °C			10	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 10 V, I _D = - 20 A		36	42	mΩ
		V _{GS} = - 4.5 V, I _D = - 20 A		45	44	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V,I _D = - 20 A		20		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = - 50 V,V _{GS} = 0 V, f = 1 MHz		1370		pF
Output Capacitance	C _{oss}			190		
Reverse Transfer Capacitance	C _{rss}			11		
Total Gate Charge	Q _g	V _{DS} = -10 V,V _{GS} = -50 V, I _D = -20 A		46		nC
Gate-Source Charge	Q _{gs}			10		
Gate-Drain Charge	Q _{gd}			6		
Gate Resistance	R _g	f = 1 MHz		52		Ω
Turn-On Delay Time	t _{d(on)}	V _{DS} = -30 V, I _D = -20 A, V _{GS} = -10 V, R _g = 2 Ω		14		ns
Rise Time	t _r			9		
Turn-Off Delay Time	t _{d(off)}			41		
Fall Time	t _f			11		
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _A = 25 °C			- 35	A
Pulse Diode Forward Current ^a	I _{SM}				- 140	
Body Diode Voltage	V _{SD}	I _S = - 20 A			- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = - 20 A, di/dt = 100 A/μs, T _J = 25 °C		47		ns
Body Diode Reverse Recovery Charge	Q _{rr}			88		nC

Notes:

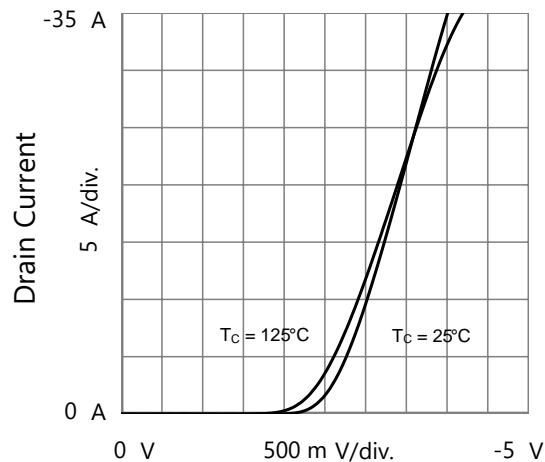
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.

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.

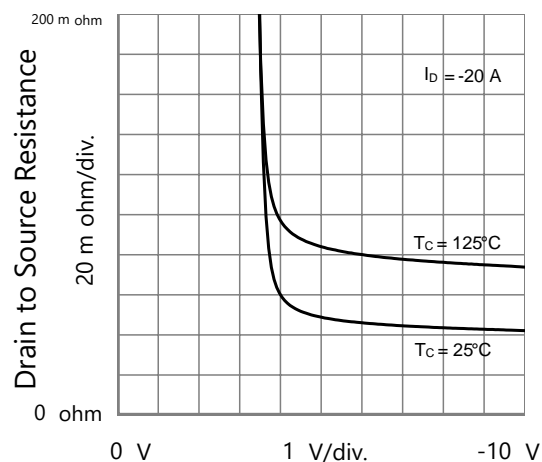
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



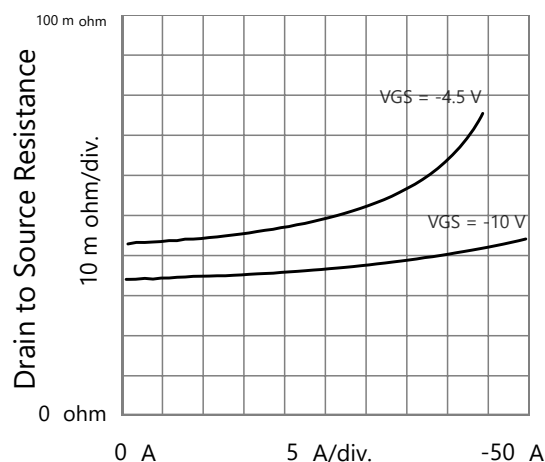
Drain to Source Voltage
Output Characteristics



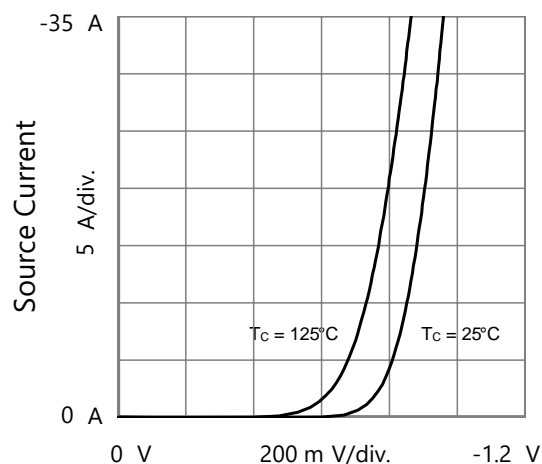
Gate to Source Voltage
Transfer Characteristics



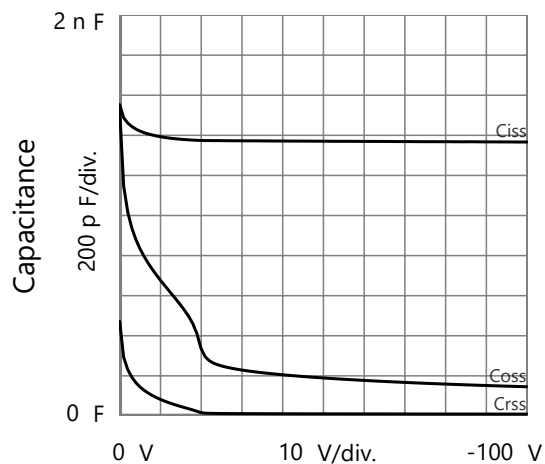
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

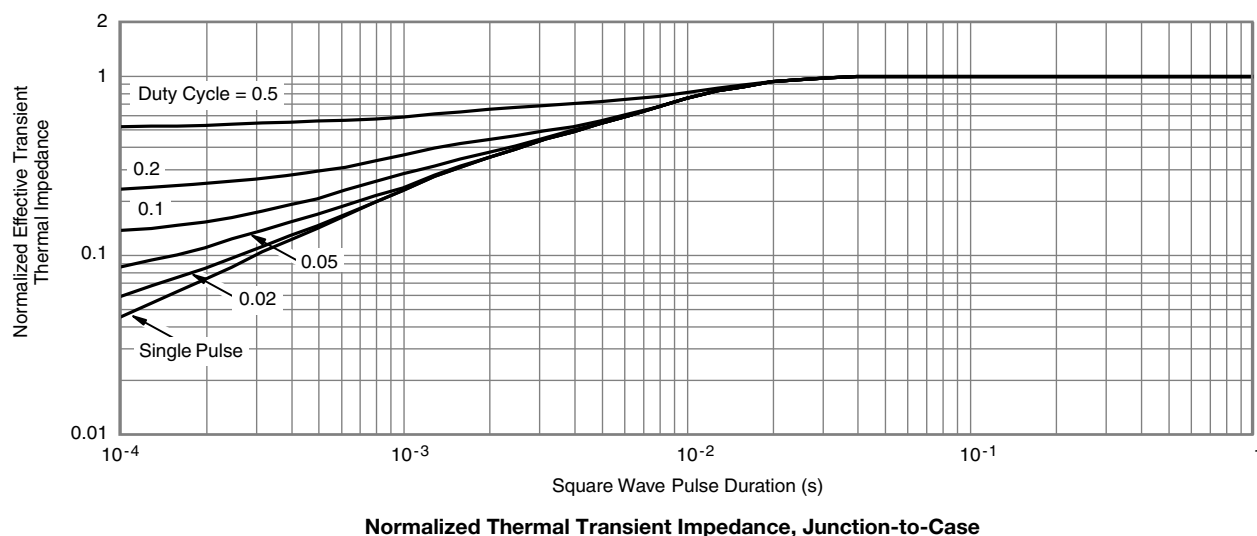
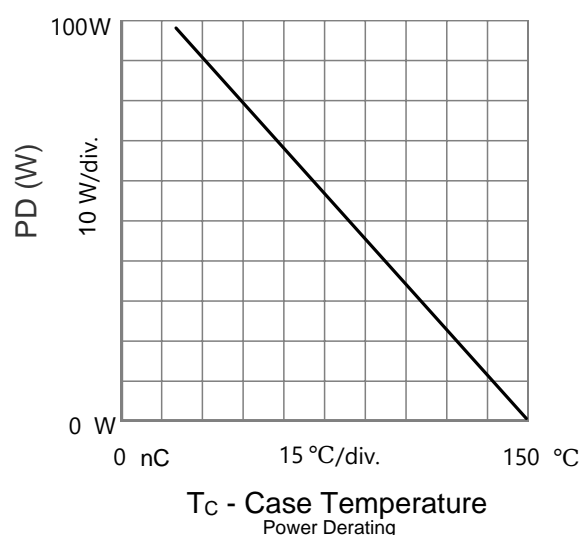
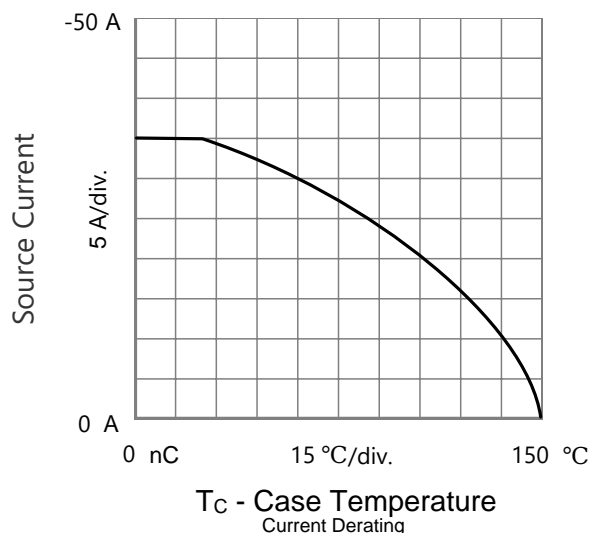
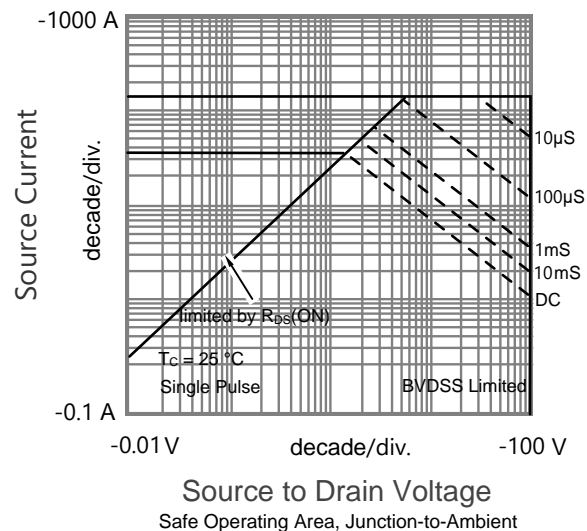
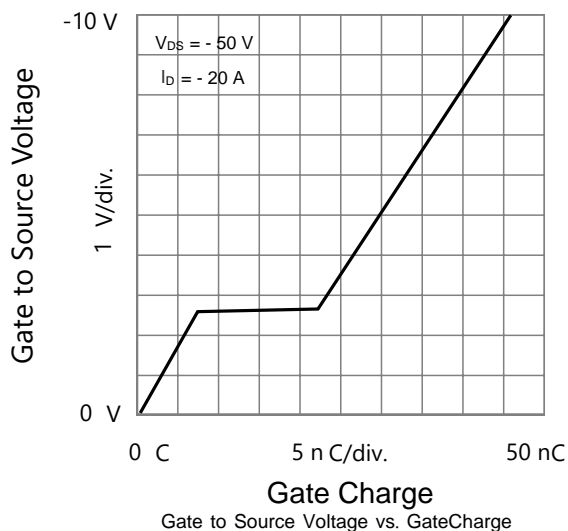


Source to Drain Voltage
Body Diode Forward Characteristics

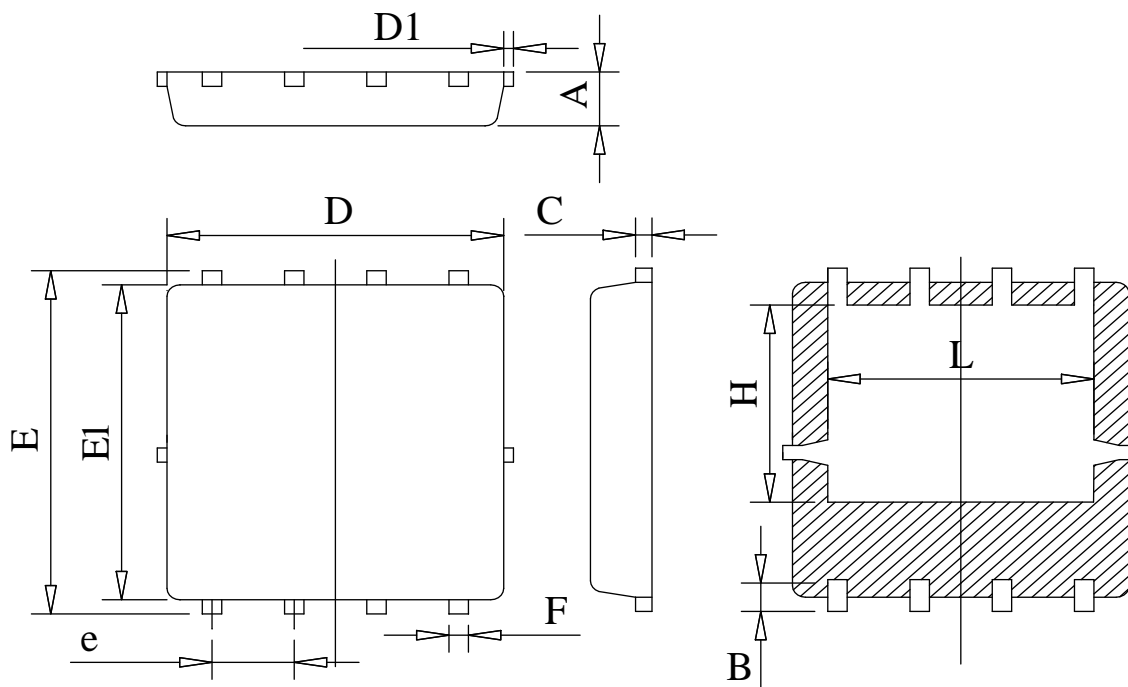


Drain to Source Voltage
Capacitances

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



DFN5X6-8L 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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