

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

PRODUCT SUMMARY

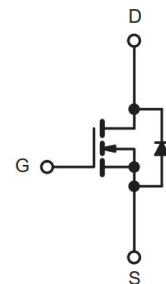
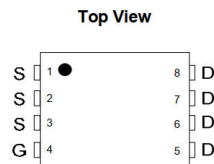
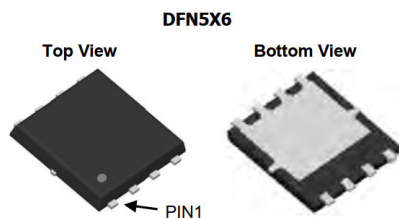
V_{DS} (V)	$R_{DS(on)}$ (m Ω)(Typ.)	I_D (A) ^a	Q_g (Typ.)
100	6.3 at $V_{GS} = 10$ V	105	30.9 nC

FEATURES

- DT-SJ Power MOSFET
- Very low on-resistance
- 100 % Rg and UIS Tested
- Fast switching

APPLICATIONS

- Power Management
- Motor Drivers
- DC-DC Converters


RoHS
 COMPLIANT


N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °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)	I_D	$T_C = 25$ °C	A
		$T_C = 100$ °C	
Pulsed Drain Current ($t = 300$ μ s)	I_{DM}	400	
Single Pulse Avalanche Current	I_{AS}	64	
Single Pulse Avalanche Energy	E_{AS}	205	mJ
Maximum Power Dissipation	P_D	$T_C = 25$ °C	W
		$T_C = 100$ °C	
		$T_A = 25$ °C	
		$T_A = 100$ °C	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	°C
Soldering Recommendations (Peak Temperature) ^{d, e}		260	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, f}	R_{thJA}	40	60	°C/W
Maximum Junction-to-Case (Drain)	R_{thJC}	0.8	1	

Notes:

 a. Based on $T_C = 25$ °C.

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

 c. $t = 10$ s.

d. The DFN5X6 is a leadless package. The end of the lead terminal is exposed copper

(not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.

e. Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.

f. Maximum under steady state conditions is 70 °C/W.

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

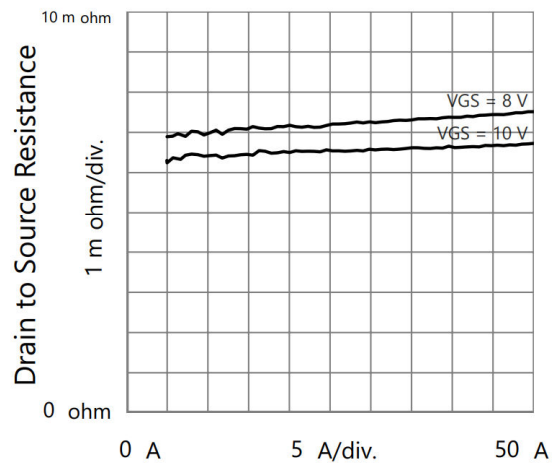
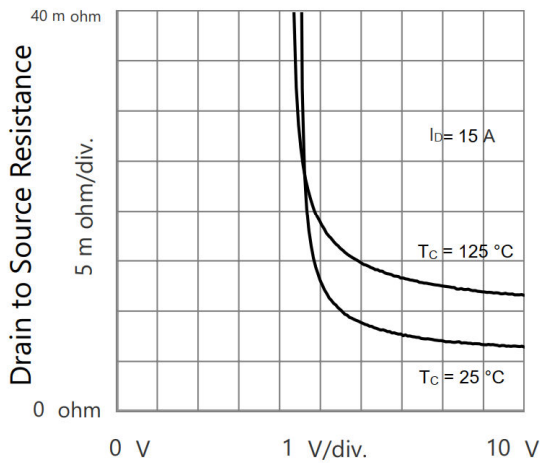
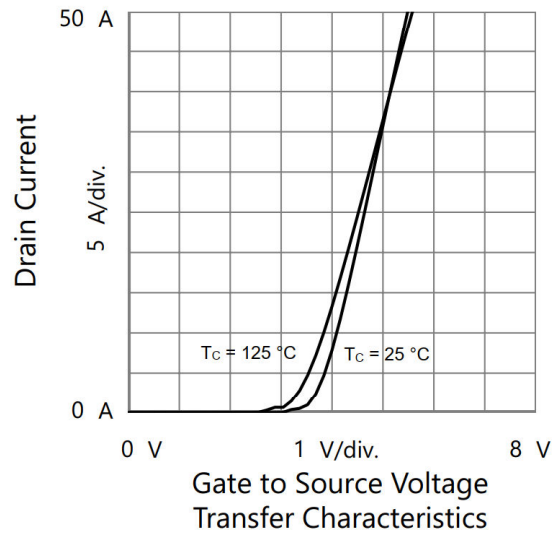
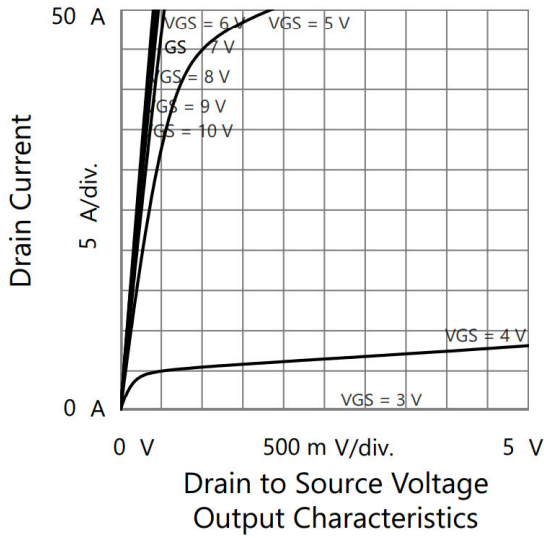
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	100	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.5	-	3.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 100	nA
Zero 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 =85°C	-	-	10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 10 V, V _{GS} = 10 V	105	-	-	A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A	-	6.3	8.0	mΩ
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 15 A	-	65	-	S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 50 V, f = 1MHz	-	1870	-	pF
Output Capacitance	C _{oss}		-	363	-	
Reverse Transfer Capacitance	C _{rss}		-	25	-	
Total Gate Charge ^c	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 15 A	-	30.9	-	nC
Gate-Source Charge ^c	Q _{gs}		-	5.6	-	
Gate-Drain Charge ^c	Q _{gd}		-	8	-	
Gate Resistance	R _g	f = 1 MHz	-	1.5	-	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 50 V, R _g = 6 Ω I _D = 15 A, V _{GEN} = 10 V,	-	15	-	ns
Rise Time ^c	t _r		-	33	-	
Turn-Off Delay Time ^c	t _{d(off)}		-	61	-	
Fall Time ^c	t _f		-	28	-	
Drain-Source Body Diode Ratings and Characteristics ^b (T _C = 25 °C)						
Continuous Source Current	I _S	T _C = 25 °C	-	-	105	A
Pulsed Source Current	I _{SM}		-	-	400	A
Forward Voltage ^a	V _{SD}	I _F = 1 A, V _{GS} = 0 V	-	-	1	V
Reverse Recovery Time	t _{rr}	I _F = 15 A, di/dt = 100 A/μs	-	220	-	ns
Reverse Recovery Charge	Q _{rr}		-	480	-	nC

Notes

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

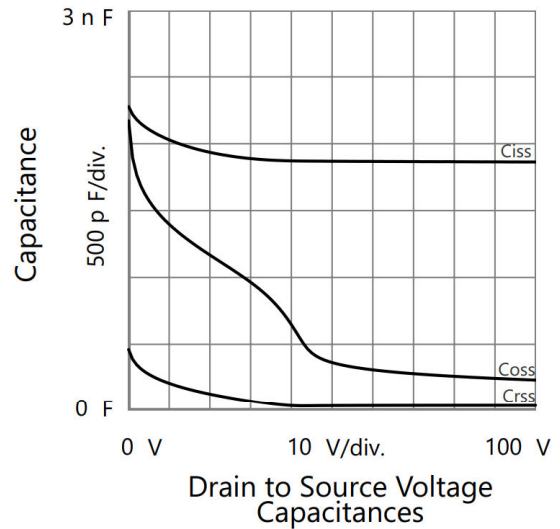
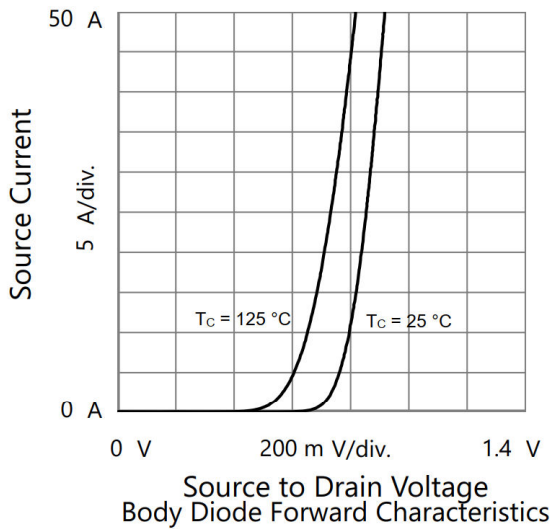
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

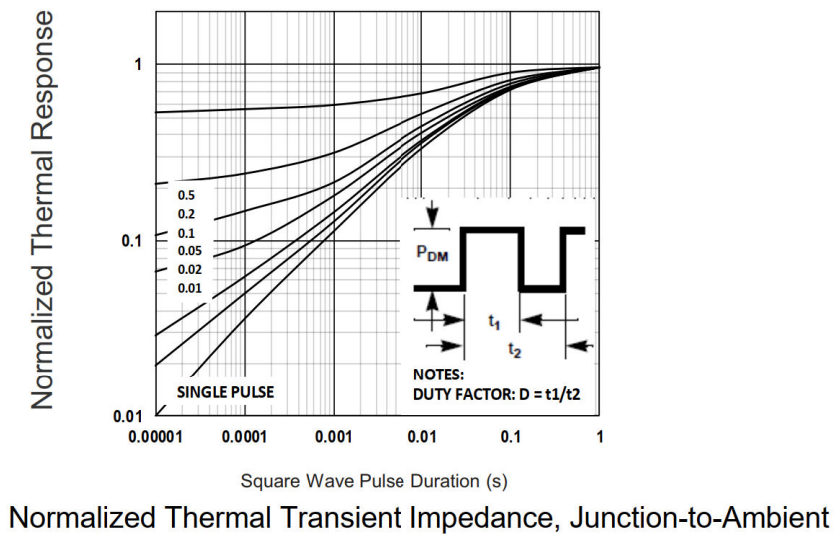
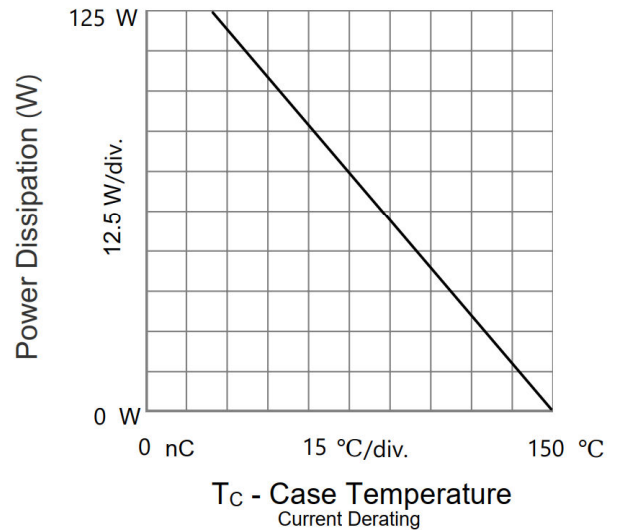
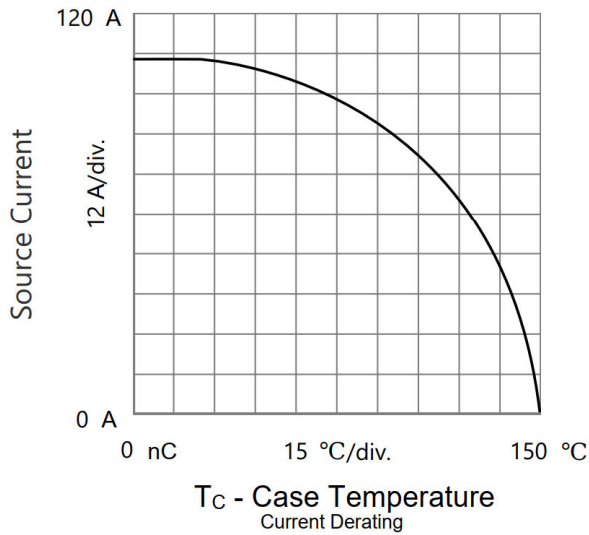
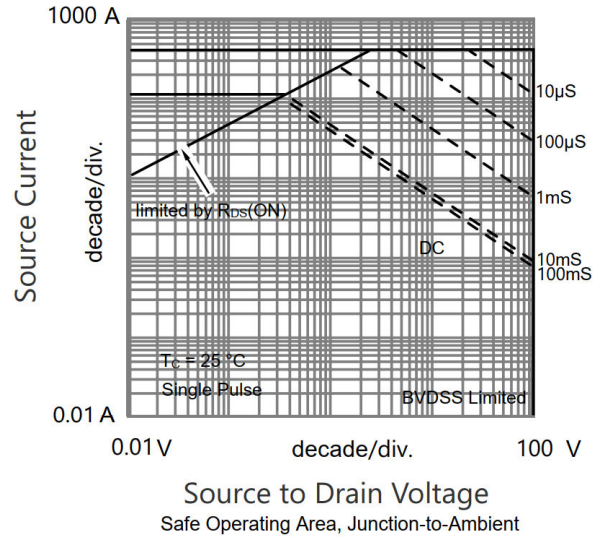
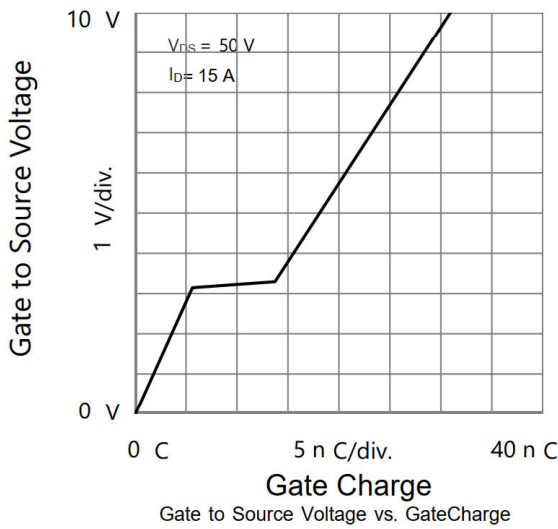


Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage

Drain Current
Drain to Source Resistance vs. Drain Current



TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise noted)



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