

N-Channel 60 V (D-S) Super Junction MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω) (Typ.)	I_D (A) ^a	Q_g (Typ.)
60	12 at $V_{GS} = 10$ V	40	11.7 nC

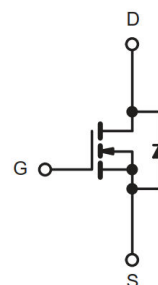
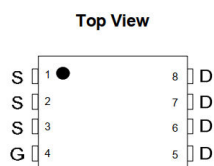
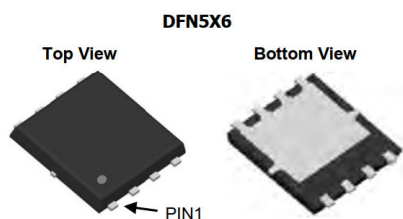
FEATURES

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


RoHS
 COMPLIANT

APPLICATIONS

- Power Management
- Motor Drivers
- DC-DC Converters



N-Channel MOSFET

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

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C)	$T_C = 25$ °C	I_D 40	A
	$T_C = 100$ °C	30	
Pulsed Drain Current	I_{DM}	160	
Single Avalanche Energy ^a	$L = 0.1$ mH	E_{AS} 70	mJ
Maximum Power Dissipation ^a	$T_C = 25$ °C	P_D 60 ^b	W
	$T_C = 100$ °C	24 ^b	
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) ^c	R_{thJA}	45	°C/W
Junction-to-Case (Drain)	R_{thJC}	2.08	

Notes

- Duty cycle ≤ 1 %.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR4 material).

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

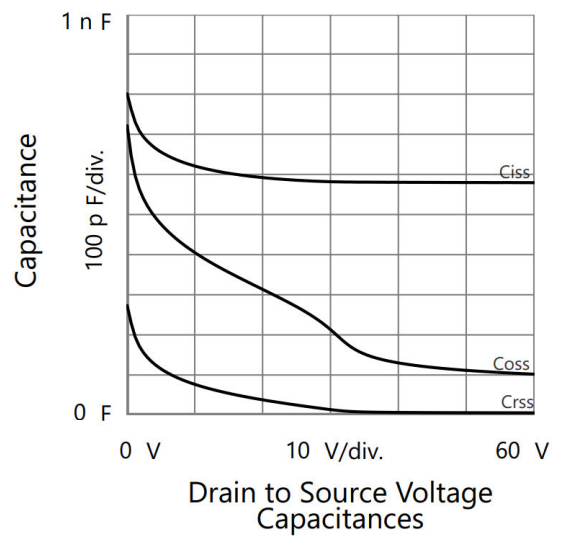
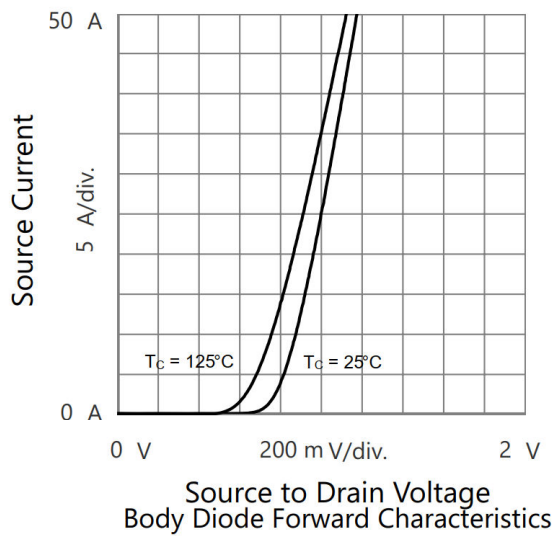
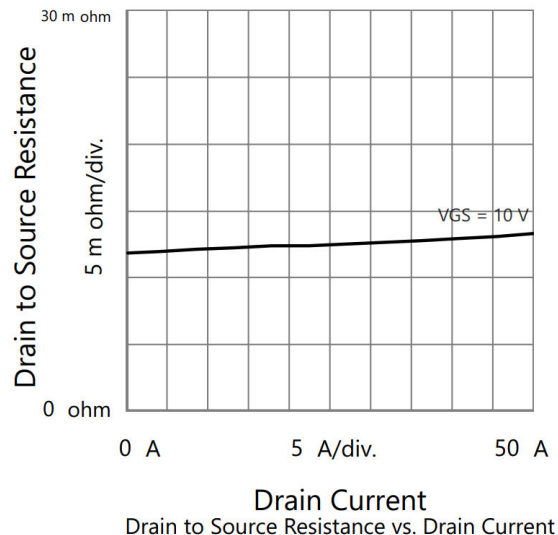
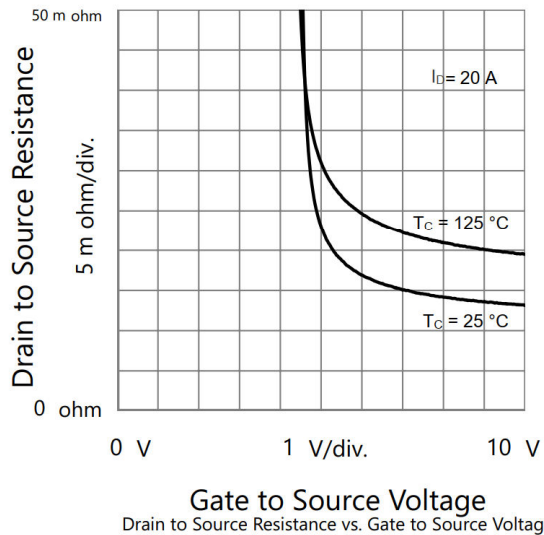
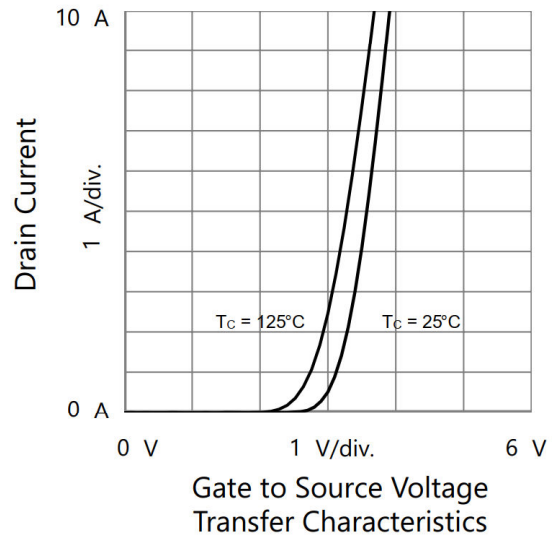
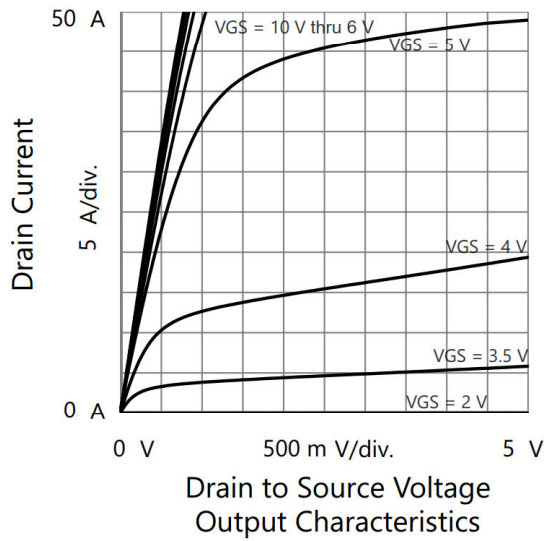
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2	-	4	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V	-	-	1	μA
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	40	-	-	A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A	-	12	16	mΩ
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 20 A	-	38	-	S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 30 V, f = 1MHz	-	2210	-	pF
Output Capacitance	C _{oss}		-	550	-	
Reverse Transfer Capacitance	C _{rss}		-	17	-	
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 20 A	-	11.7	-	nC
Gate-Source Charge ^c	Q _{gs}		-	1.5	-	
Gate-Drain Charge ^c	Q _{gd}		-	3.1	-	
Gate Resistance	R _g	f = 1 MHz	-	2.0	-	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _g = 6 Ω I _D = 20 A, V _{GEN} = 10 V,	-	30	-	ns
Rise Time ^c	t _r		-	65	-	
Turn-Off Delay Time ^c	t _{d(off)}		-	52	-	
Fall Time ^c	t _f		-	25	-	
Drain-Source Body Diode Ratings and Characteristics ^b (T _C = 25 °C)						
Continuous Source Current	I _S	T _C = 25 °C	-	-	40	A
Pulsed Source Current	I _{SM}		-	-	160	A
Forward Voltage ^a	V _{SD}	I _F = 1 A, V _{GS} = 0 V	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _F = 20 A, di/dt = 100 A/μs	-	20	-	ns
Reverse Recovery Charge	Q _{rr}		-	10	-	nC

Notes

- a. Pulse test; pulse width $< 300\text{ }\mu\text{s}$, 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 ($T_A = 25^\circ\text{C}$, unless otherwise noted)



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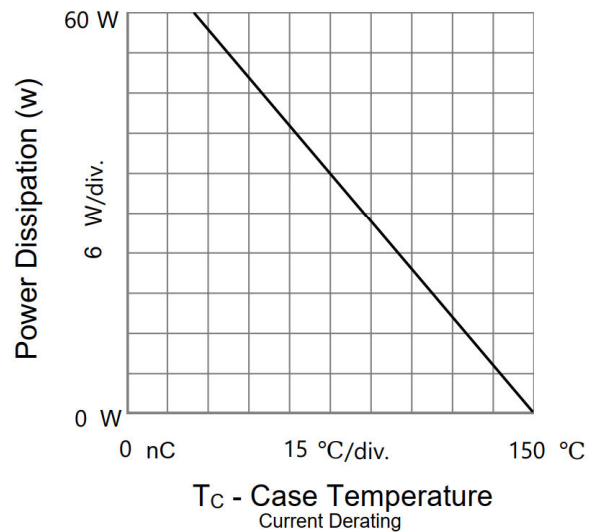
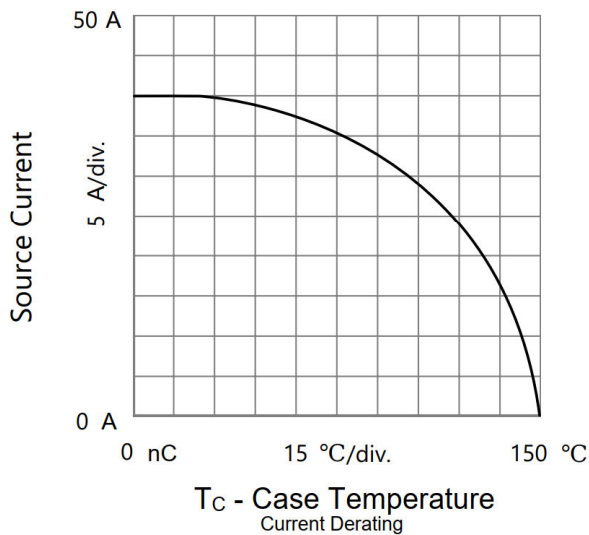
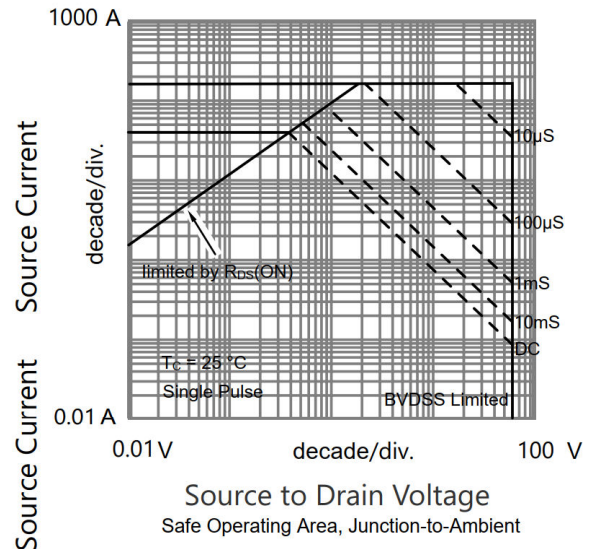
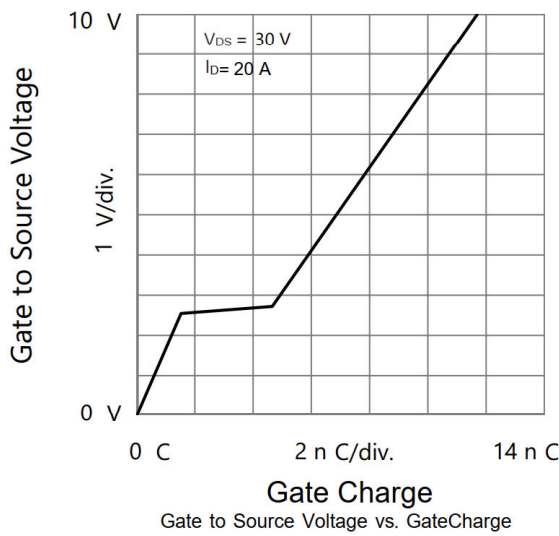
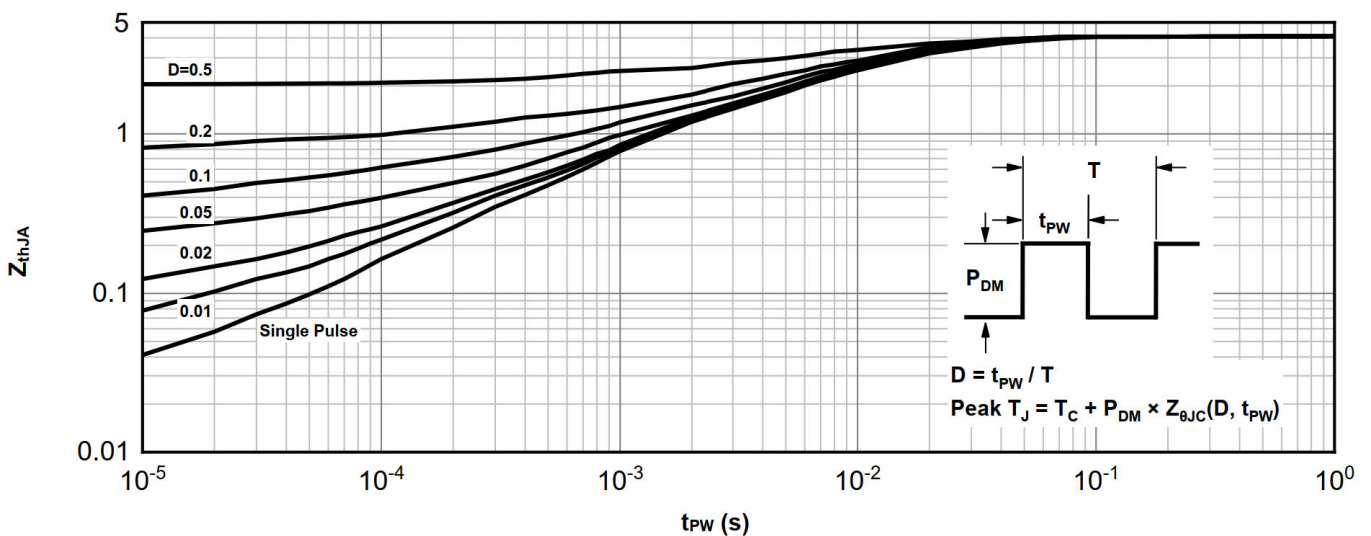


Fig.15 Transient thermal impedance from junction to ambient



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