

N-Channel 60 V (D-S) MOSFET


RoHS
 COMPLIANT

PRODUCT SUMMARY

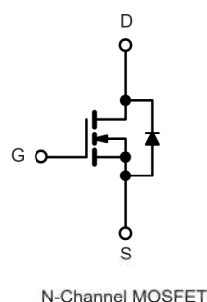
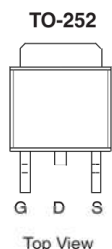
V _{DS} (V)	R _{DS(on)} (mΩ)(Typ.)	I _D (A) ^a (Max.)
60	29 at V _{GS} = 10 V	35
	36 at V _{GS} = 4.5 V	30

FEATURES

- DT-Trench Power MOSFET
- 100% Rg and UIS Tested

APPLICATIONS

- Motor Drive
- Power Tools



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

Parameter	Symbol	Limit	Unit
Gate-Source Voltage	V _{GS}	± 20	V
Continuous Drain Current (T _J = 175 °C) ^b	I _D	35	A
		25 ^a	
Pulsed Drain Current	I _{DM}	90	
Continuous Source Current (Diode Conduction)	I _S	35	
Avalanche Current	I _{AS}	30	
Single Avalanche Energy (Duty Cycle ≤ 1 %)	L = 0.1 mH E _{AS}	29 ^c	mJ
Maximum Power Dissipation	P _D	45	W
		2.3 ^{b, c}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R _{thJA}	13	18	°C/W
		35	50	
Maximum Junction-to-Case	R _{thJC}	2.0	3.0	

Notes:

a. Package limited.

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

c. t ≤ 10 s.

SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ. ^a	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	1		3	
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
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125 °C			50	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	35			A
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A		29	36	mΩ
		V _{GS} = 4.5 V, I _D = 10 A		36	46	
Forward Transconductance ^b	g _{fs}	V _{DS} = 5 V, I _D = 20 A		40		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 30 V, f = 1 MHz		826		pF
Output Capacitance	C _{oss}			51		
Reverse Transfer Capacitance	C _{rss}			43		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 15 A		20	30	nC
Gate-Source Charge ^c	Q _{gs}			1.9		
Gate-Drain Charge ^c	Q _{gd}			4.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 1.0 Ω I _D = 15 A, V _{GEN} = 10 V, R _g = 2.5 Ω		13		ns
Rise Time ^c	t _r			46		
Turn-Off Delay Time ^c	t _{d(off)}			25		
Fall Time ^c	t _f			10		
Source-Drain Diode Ratings and Characteristics (T _C = 25 °C)						
Pulsed Current	I _{SM}				90	A
Diode Forward Voltage	V _{SD}	I _F = 1 A, V _{GS} = 0 V		0.6	1.0	V
Reverse Recovery Time	t _{rr}	I _F = 15 A, di/dt = 500 A/μs		25	50	ns
Reverse Recovery Charge	Q _{rr}	I _F = 15 A, di/dt = 500 A/μs		45	100	nC

Notes:

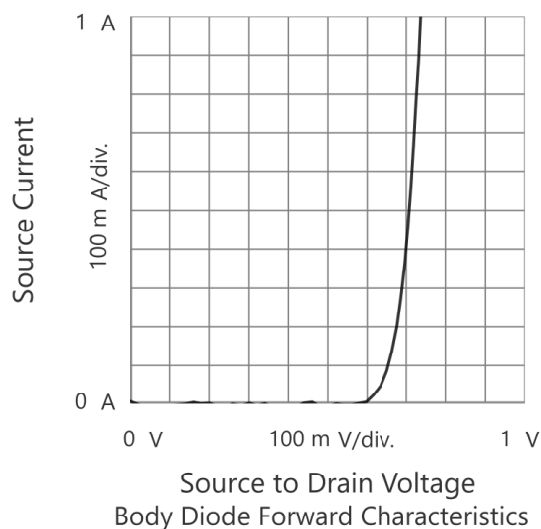
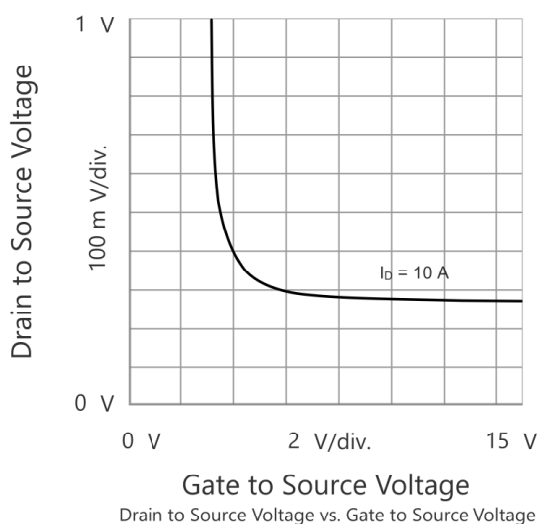
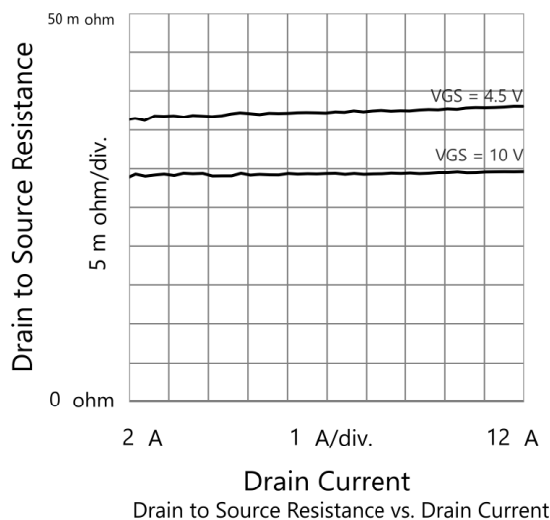
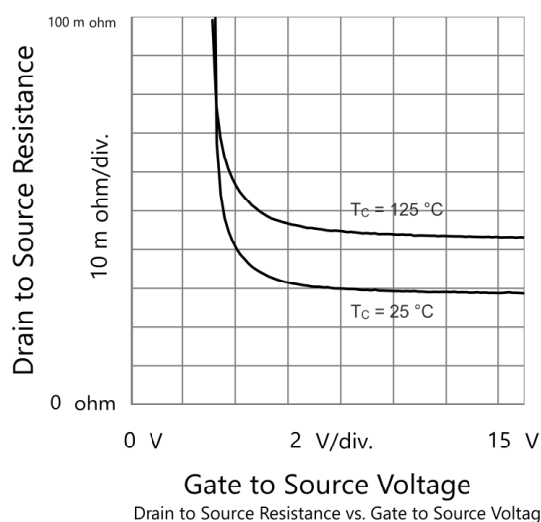
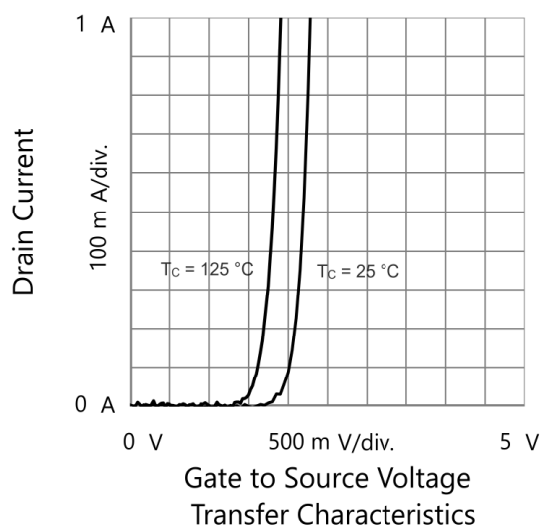
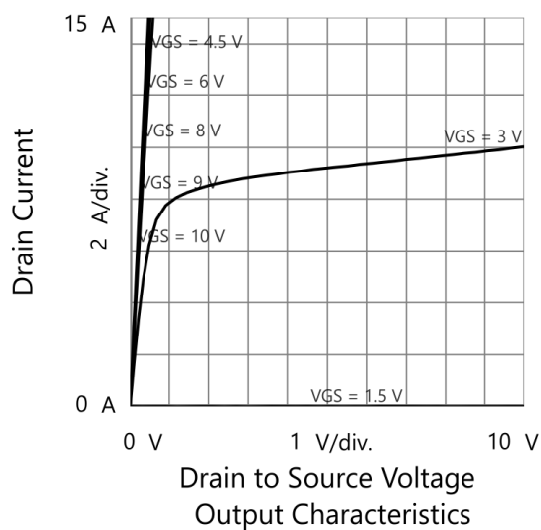
a. For design aid only; not subject to production testing.

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

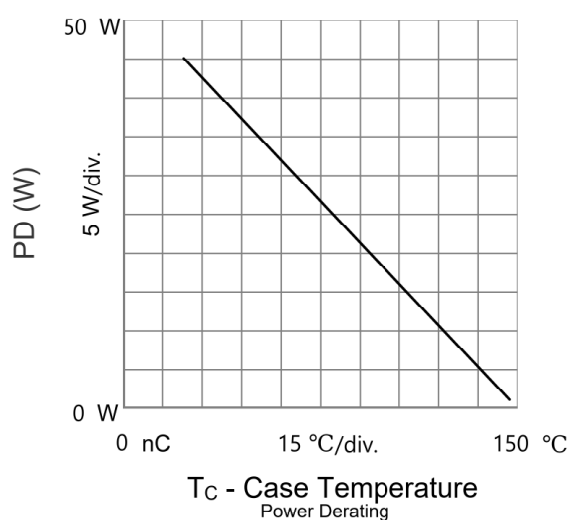
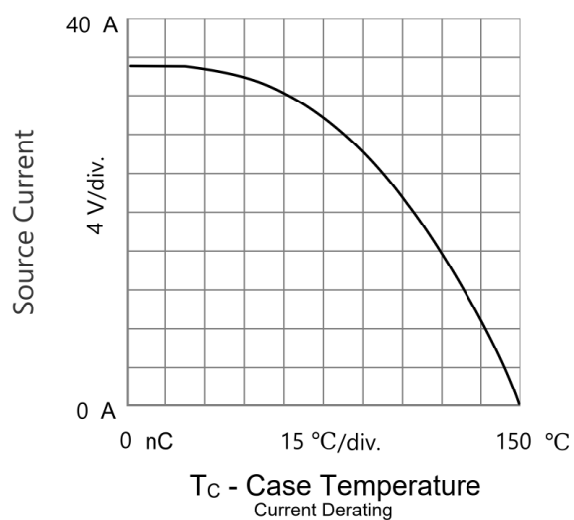
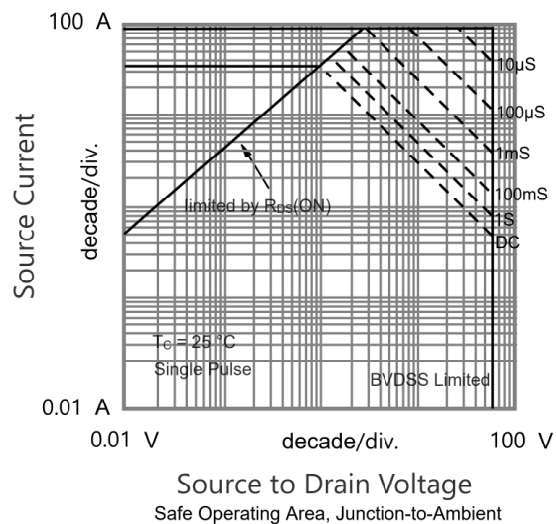
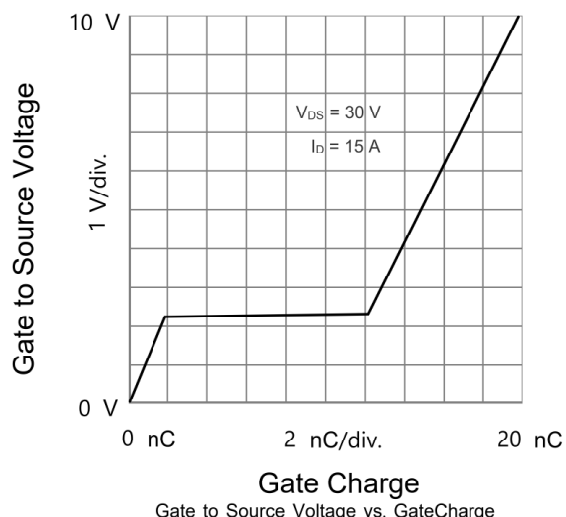
c. Independent of operating temperature.

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 (25 °C unless noted)



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