

P-Channel 150 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)(Typ.)	I_D (A) ^a	Q_g (Typ.)
- 150	185 at $V_{GS} = - 10$ V	- 30	37 nC

FEATURES

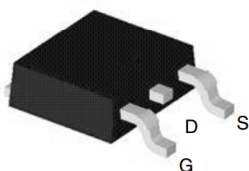
- DT-Trench Power MOSFET
- 100 % R_g and UIS Tested


RoHS
 COMPLIANT

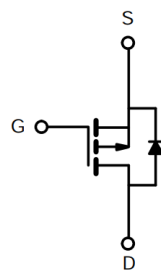
APPLICATIONS

- Active Clamp in Intermediate DC/DC Power Supplies
- H-Bridge High Side Switch for Lighting Application

TO-252 Pin Configuration



Top View



P-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-150	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C)	$T_C = 25$ °C	- 30	A
	$T_C = 70$ °C	- 20	
Pulsed Drain Current	I_{DM}	- 120	
Single Pulse Avalanche Energy	E_{AS}	103	mJ
Maximum Power Dissipation	$T_C = 25$ °C	108 ^c	W
	$T_C = 70$ °C	42	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C
Soldering Recommendations (Peak Temperature)		260	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	R_{thJA}	-	50	°C/W
Maximum Junction-to-Case (Drain)	R_{thJC}	-	1.2	

Notes:

- Based on $T_C = 25$ °C.
- Surface mounted on 1" x 1" FR4 board.
- See SOA curve for voltage derating

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, I _D = - 250 μA	- 150			V
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = - 250 μA	- 2		- 4	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} = - 150V, V _{GS} = 0 V			- 1	μA
		V _{DS} = - 120V, V _{GS} = 0 V, T _J = 55 °C			- 10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ - 5 V, V _{GS} = - 10 V	- 30			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 10 V, I _D = - 5 A		185	225	mΩ
Forward Transconductance ^a	g _{fs}	V _{DS} = - 5 V, I _D = - 5 A		15		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = - 75 V, V _{GS} = 0 V, f = 1 MHz		655		pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			15		
Total Gate Charge	Q _g	V _{DS} = - 75 V, V _{GS} = - 10 V, I _D = - 5 A		37		nC
Gate-Source Charge	Q _{gs}			10		
Gate-Drain Charge	Q _{gd}			18		
Gate Resistance	R _g	f = 1 MHz		50		Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 75 V, R _L = 25 Ω I _D ≅ - 5 A, V _{GEN} = - 10 V, R _g = 1 Ω		22		ns
Rise Time	t _r			45		
Turn-Off DelayTime	t _{d(off)}			53		
Fall Time	t _f			28		
Drain-Source Body Diode Characteristics						
Continous Source-Drain Diode Current	I _S	T _C = 25 °C			- 30	A
Pulse Diode Forward Current (100 μs)	I _{SM}				- 120	
Body Diode Voltage	V _{SD}	I _S = - 1 A		- 0.6	- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = - 5 A, dI/dt = 100 A/μs, T _J = 25 °C		92		ns
Body Diode Reverse Recovery Charge	Q _{rr}			118		nC
Reverse Recovery Fall Time	t _a			37		ns
Reverse Recovery Rise Time	t _b			31		

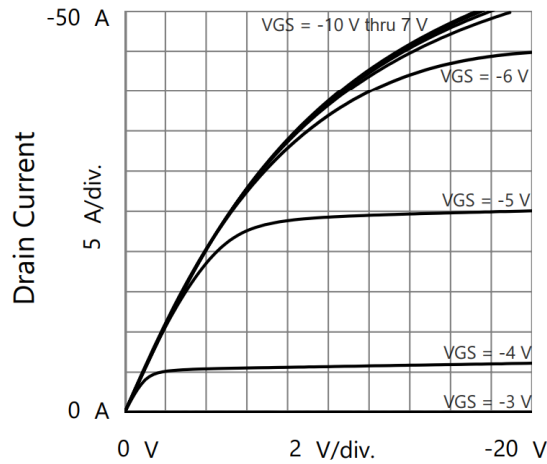
Notes:

a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

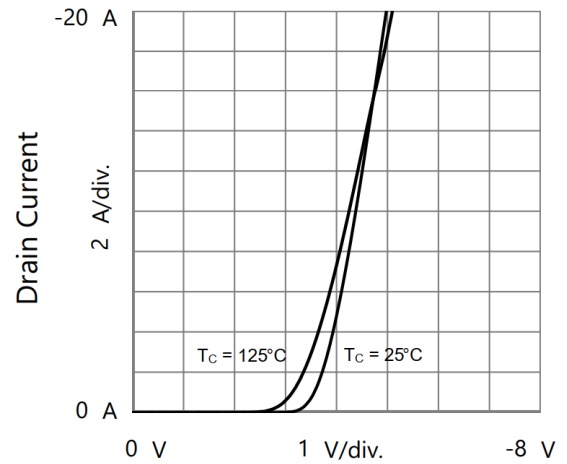
b. Guaranteed by design, not subject to production testing.

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.

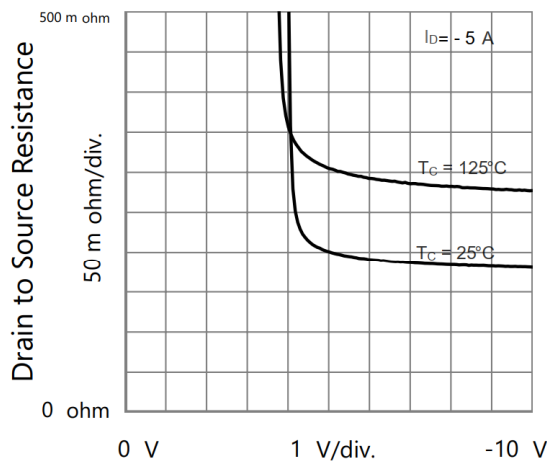
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



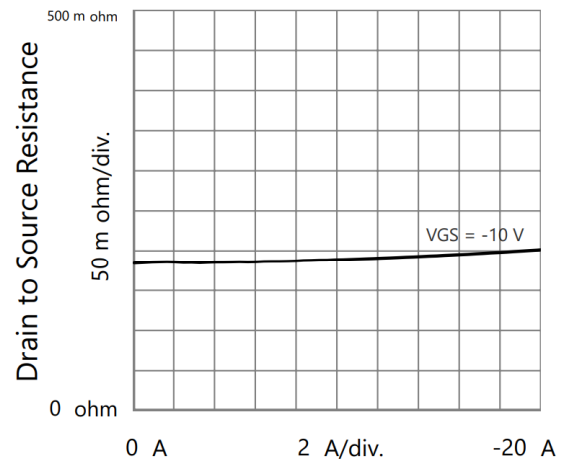
Drain to Source Voltage
Output Characteristics



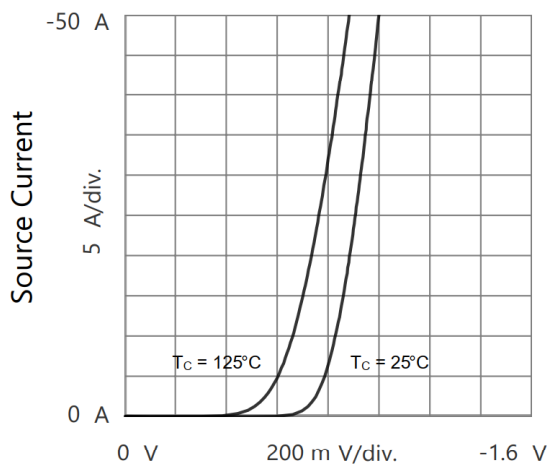
Gate to Source Voltage
Transfer Characteristics



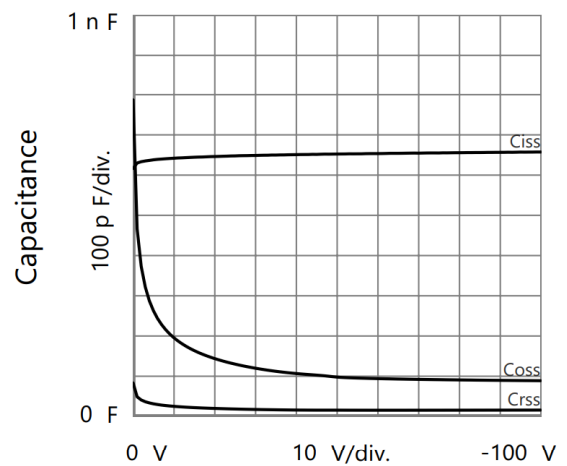
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

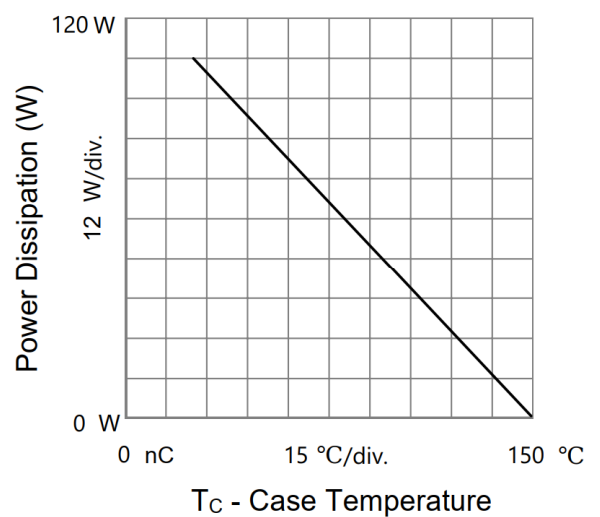
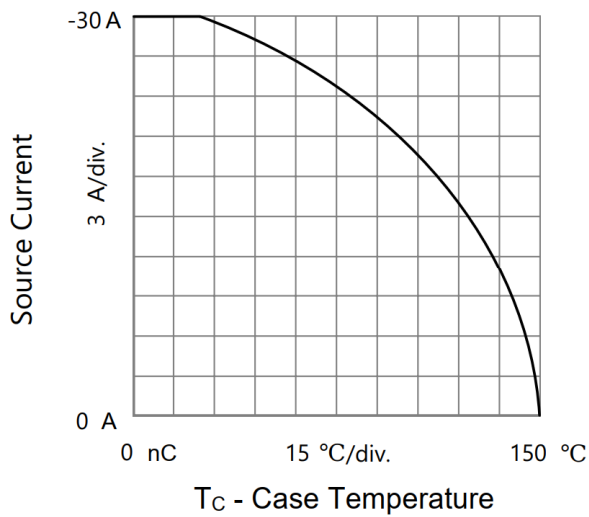
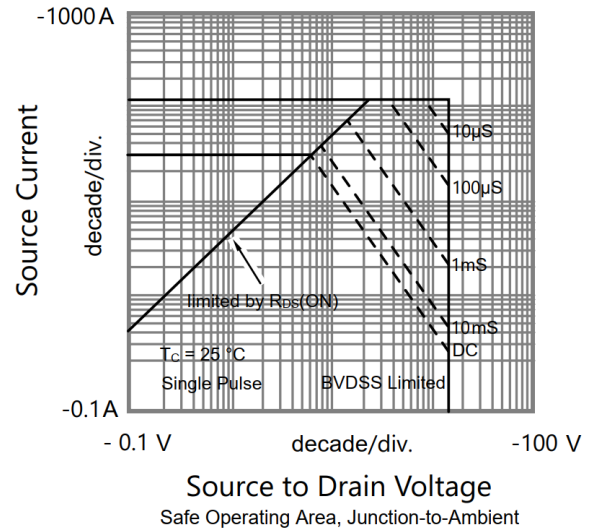
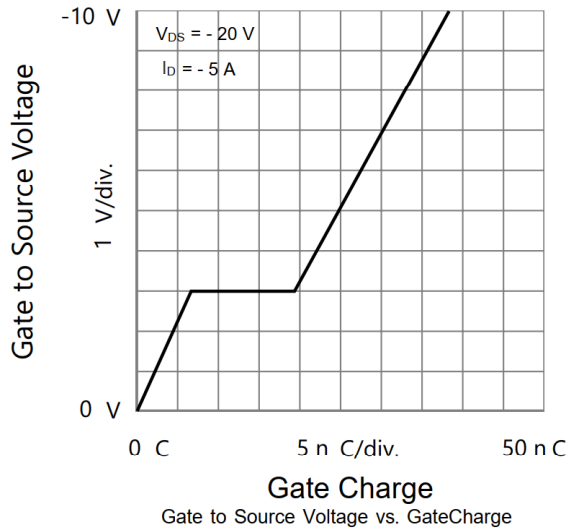


Source to Drain Voltage
Body Diode Forward Characteristics

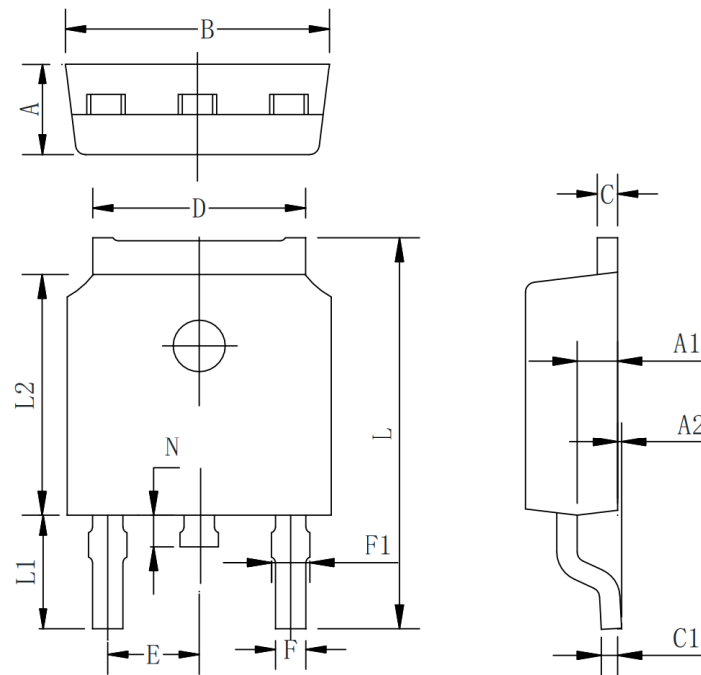


Drain to Source Voltage
Capacitances

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



TO-252-2L PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

Symbol	Min	Typ	Max
A	2.10	2.30	2.50
A1	0.88	1.01	1.16
A2	0.00	0.15	0.28
B	6.40	6.60	6.80
C	0.42	0.50	0.63
C1	0.42	0.50	0.63
D	5.08	5.32	5.65
E	2.286 TYP		
F	0.63	0.76	0.89
F1	0.64	0.86	1.08
L	9.30	9.90	10.80
L1	2.4	2.8	3.6
L2	5.90	6.10	6.55
N	0.57	0.80	1.05

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