

N-Channel 150 V (D-S) MOSFET

PRODUCT SUMMARY

V _{DS} (V)	R _{DS(on)} (mΩ)(Typ.)	I _D (A)	Q _g (Typ.)
150	72 at V _{GS} = 10 V	25	9

FEATURES

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

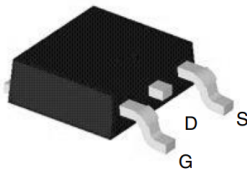


RoHS
COMPLIANT

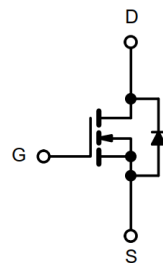
APPLICATIONS

- DC/DC Converters
- DC/AC Inverters
- Motor Drives

TO-252 Pin Configuration



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 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	I _D	T _C = 25 °C	25	A
		T _C = 70 °C	22	
Pulsed Drain Current (t = 300 μs)	I _{DM}	80		
Avalanche Current	I _{AS}	22		
Single Avalanche Energy ^a	E _{AS}	35	mJ	
Maximum Power Dissipation ^a	P _D	T _C = 25 °C	77 ^b	W
		T _A = 25 °C ^c	5.6	
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}	50	°C/W
Junction-to-Case (Drain)	R _{thJC}	1.5	

Notes:

- Duty cycle ≤ 1 %.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR-4 material).
- Base on T_C = 25 °C.

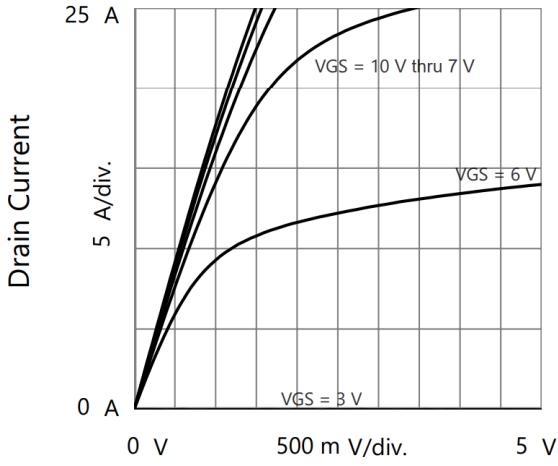
SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	150			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.5		4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}, T_J = 125\text{ }^\circ\text{C}$			50	
		$V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}, T_J = 150\text{ }^\circ\text{C}$			250	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 10\text{ V}, V_{GS} = 10\text{ V}$	25			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		72	93	m Ω
Forward Transconductance ^a	g_{fs}	$V_{DS} = 5\text{ V}, I_D = 10\text{ A}$		23		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 75\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		563		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			8.5		
Total Gate Charge ^c	Q_g	$V_{DS} = 75\text{ V}, V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		9		nC
Gate-Source Charge ^c	Q_{gs}			2.2		
Gate-Drain Charge ^c	Q_{gd}			1.3		
Gate Resistance	R_g		$f = 1\text{ MHz}$		4.7	
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 75\text{ V}, R_L = 7.5\text{ }\Omega$ $I_D \cong 10\text{ A}, V_{GEN} = 10\text{ V}, R_g = 1\text{ }\Omega$		8		ns
Rise Time ^c	t_r			15		
Turn-Off Delay Time ^c	$t_{d(off)}$			18		
Fall Time ^c	t_f			6		
Drain-Source Body Diode Ratings and Characteristics^b $T_C = 25\text{ }^\circ\text{C}$						
Continuous Current	I_S				25	A
Pulsed Current	I_{SM}				80	
Forward Voltage ^a	V_{SD}	$I_F = 1\text{ A}, V_{GS} = 0\text{ V}$		0.7	1.0	V
Reverse Recovery Time	t_{rr}	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		34	51	ns
Reverse Recovery Charge	Q_{rr}				50	75

Notes:

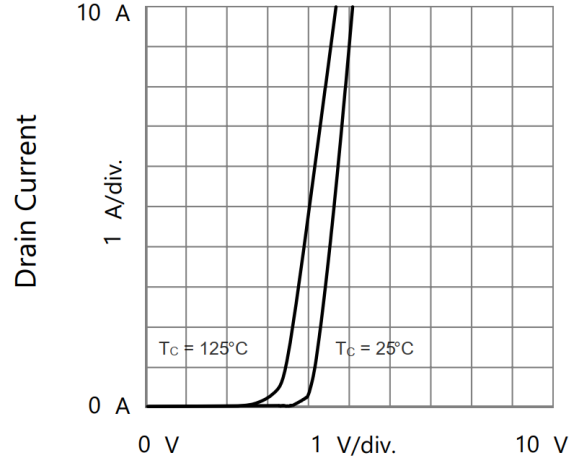
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

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.

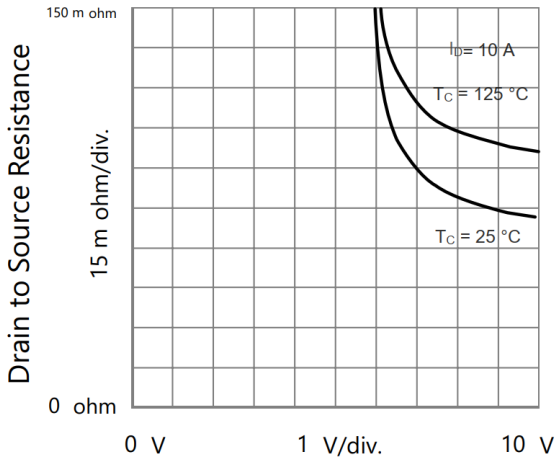
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



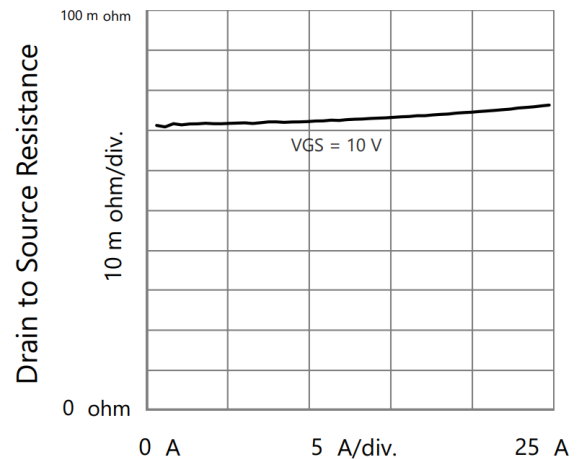
Drain to Source Voltage
Output Characteristics



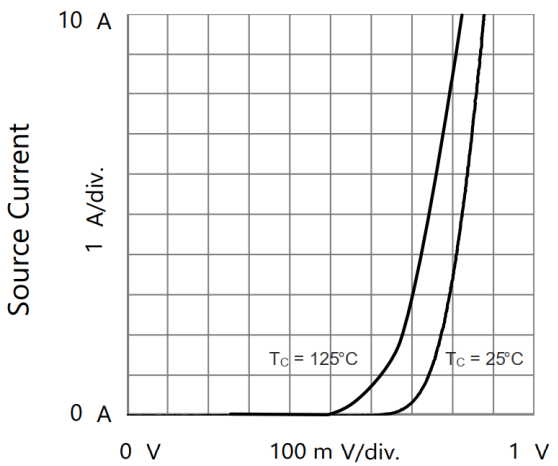
Gate to Source Voltage
Transfer Characteristics



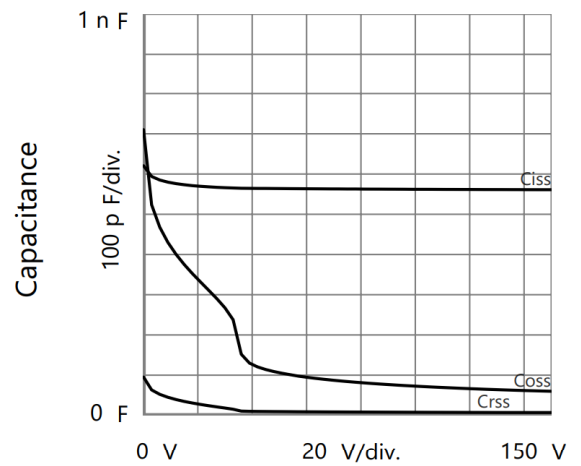
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

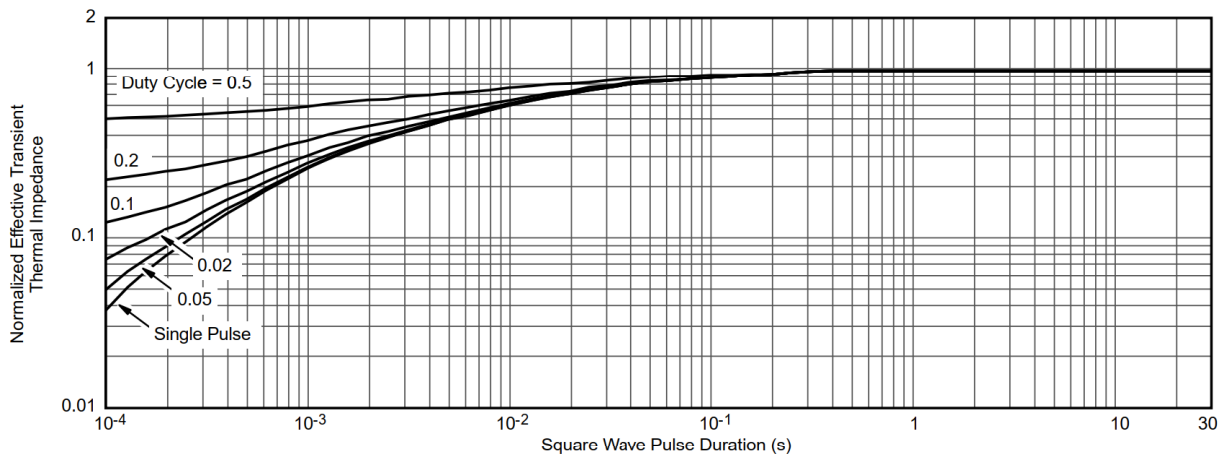
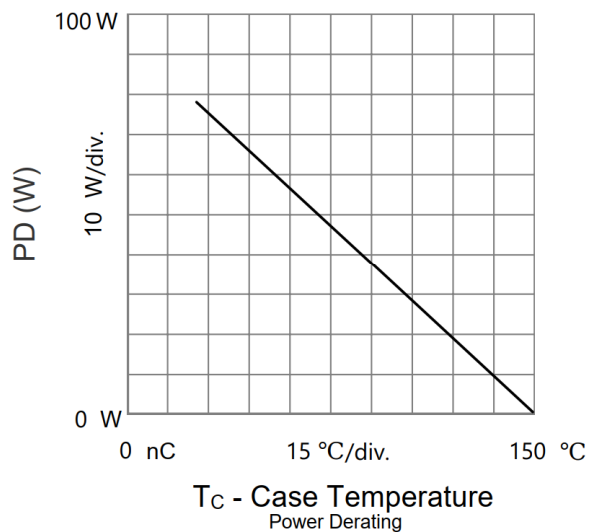
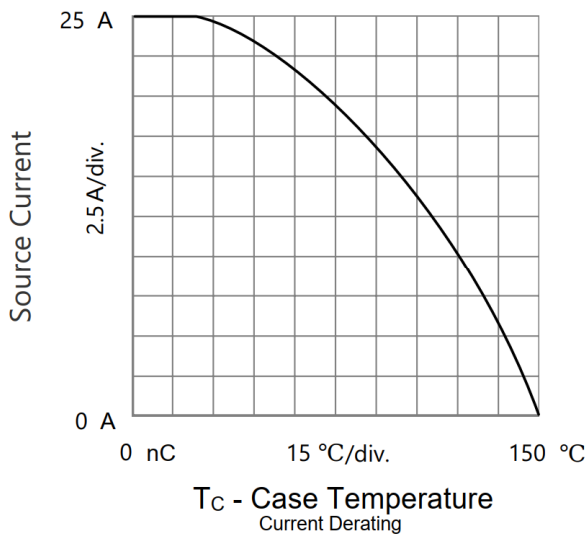
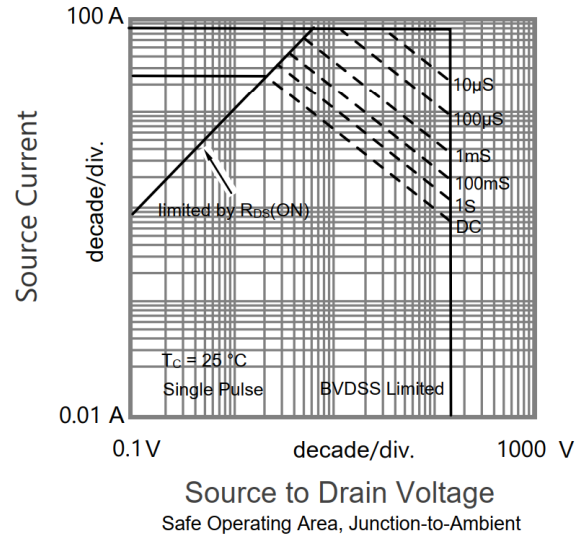
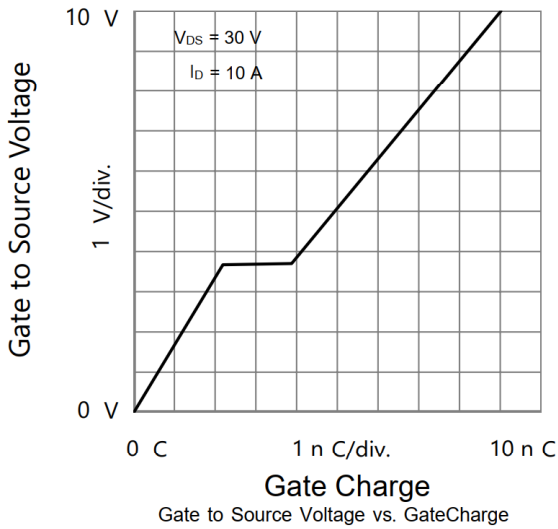


Source to Drain Voltage
Body Diode Forward Characteristics



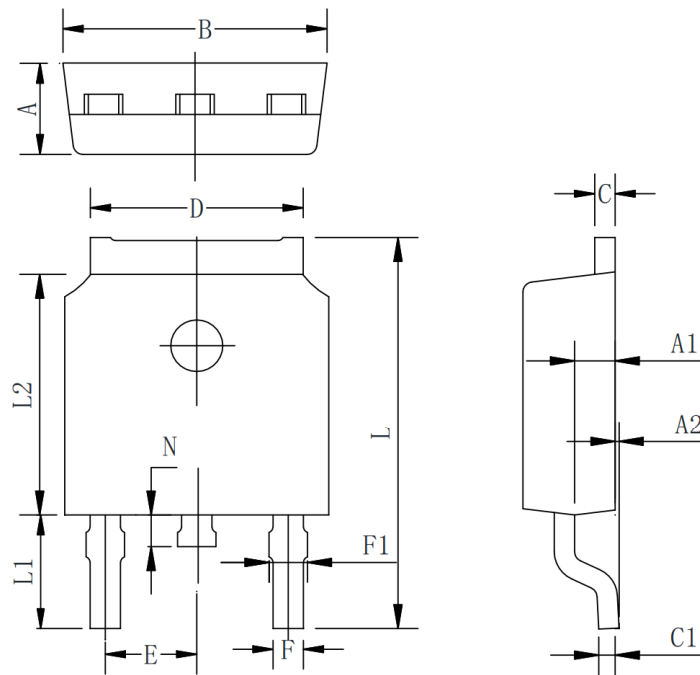
Drain to Source Voltage
Capacitances

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Case

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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