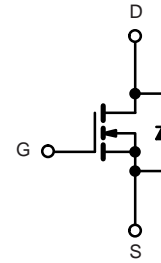


N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

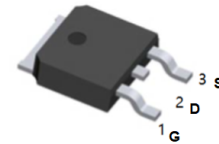
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
100	0.114 at V _{GS} = 10 V	15



N-Channel MOSFET

APPLICATIONS

- Primary Side Switch



TO-252(DPAK) top view

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 = 175 °C) ^b	I _D	T _C = 25 °C	15	
		T _C = 125 °C	13	
Pulsed Drain Current	I _{DM}	40	A	
Continuous Source Current (Diode Conduction)	I _S	3		
Avalanche Current	I _{AS}	3		
Single Pulse Avalanche Energy	L = 0.1 mH	E _{AS}	18	mJ
Maximum Power Dissipation	P _D	T _C = 25 °C	96 ^b	W
		T _A = 25 °C	3 ^a	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 s	15	18
		Steady State	40	50
Junction-to-Case (Drain)	R _{thJC}	0.85	1.1	°C/W

Notes:

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

b. See SOA curve for voltage derating.

N-Channel 100 V (D-S) MOSFET

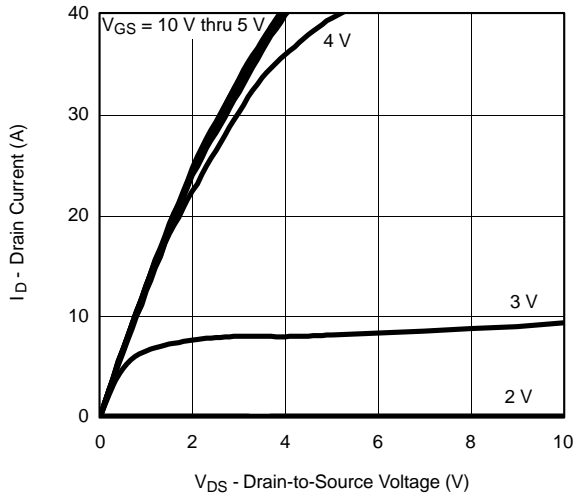
SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ. ^a	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0		2.5	
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} = 100 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	40			A
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 3 A		114		mΩ
		V _{GS} = 10 V, I _D = 3 A, T _J = 125 °C		120		
		V _{GS} = 10 V, I _D = 3 A, T _J = 175 °C		140		
		V _{GS} = 4.5 V, I _D = 3 A		120		
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 3 A		35		S
Dynamic^a						
Input Capacitance	C _{iSS}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		950		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			60		
Total Gate Charge ^c	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 3 A		24	41	nC
Gate-Source Charge ^c	Q _{gs}			8		
Gate-Drain Charge ^c	Q _{gd}			12		
Gate Resistance	R _g		0.5		2.9	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 50 V, R _L = 5.2 Ω I _D ≅ 3 A, V _{GEN} = 10 V, R _g = 2.5 Ω		15	25	ns
Rise Time ^c	t _r			50	75	
Turn-Off Delay Time ^c	t _{d(off)}			30	45	
Fall Time ^c	t _f			60	90	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)						
Pulsed Current	I _{SM}				5	A
Diode Forward Voltage ^b	V _{SD}	I _F = 3 A, V _{GS} = 0 V		0.9	1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3 A, di/dt = 100 A/μs		180	250	ns

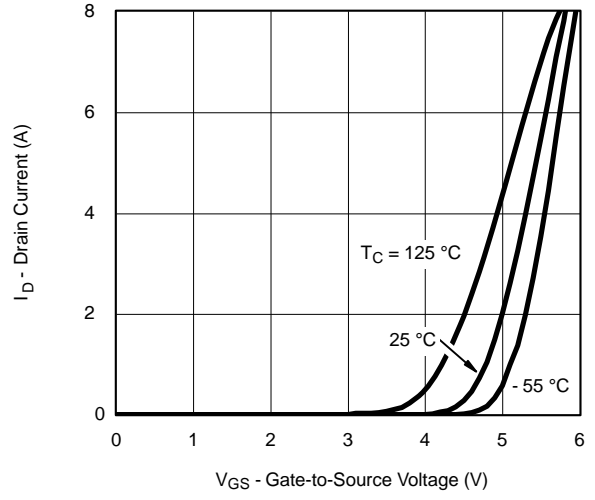
Notes:

- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
c. Independent of operating temperature.

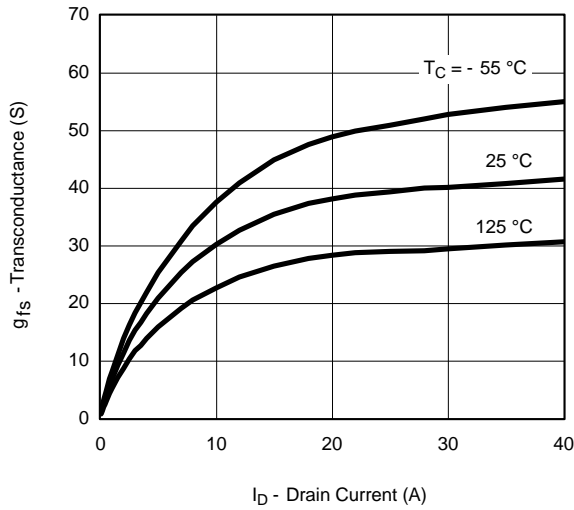
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



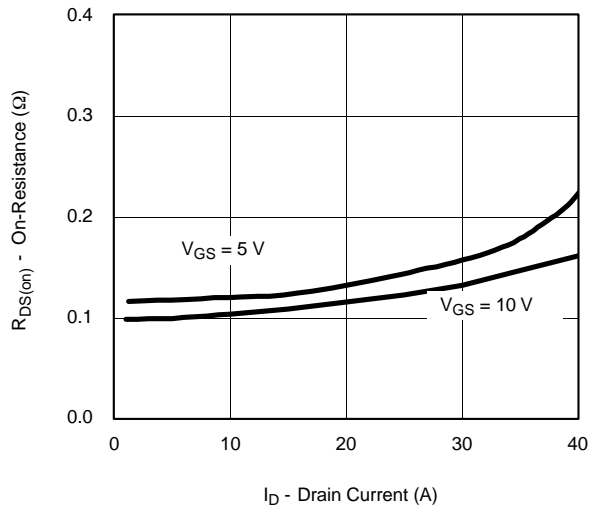
Output Characteristics



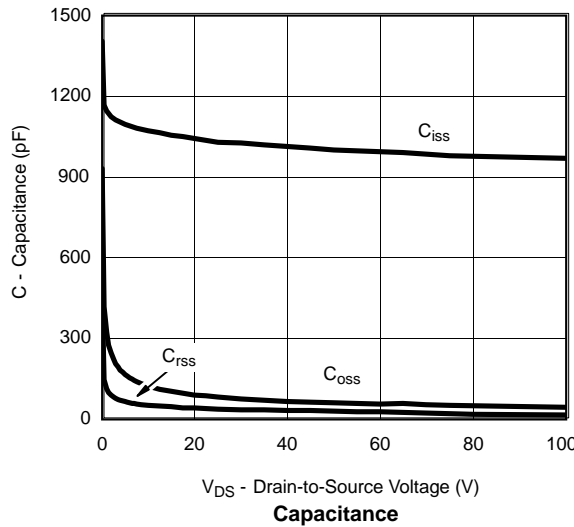
Transfer Characteristics



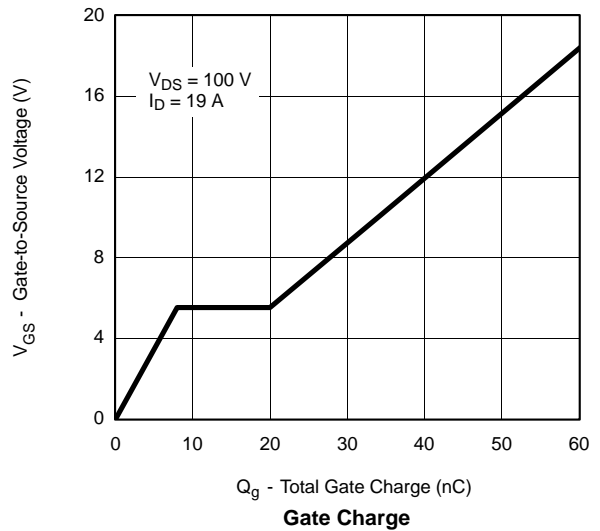
Transconductance



On-Resistance vs. Drain Current



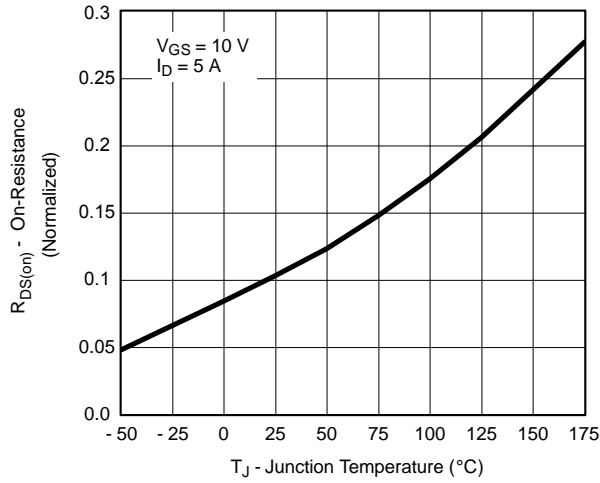
Capacitance



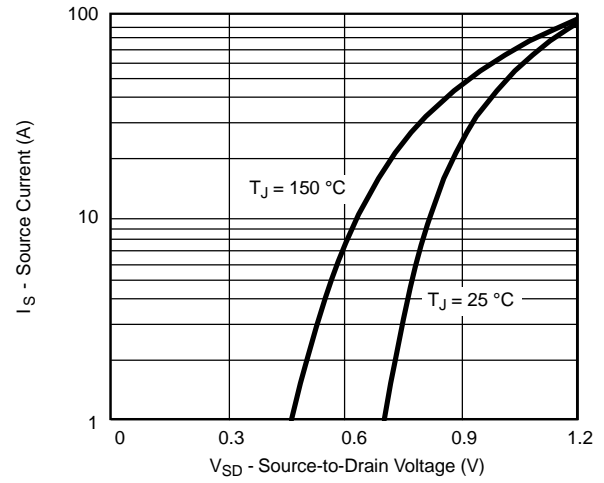
Gate Charge

N-Channel 100 V (D-S) MOSFET

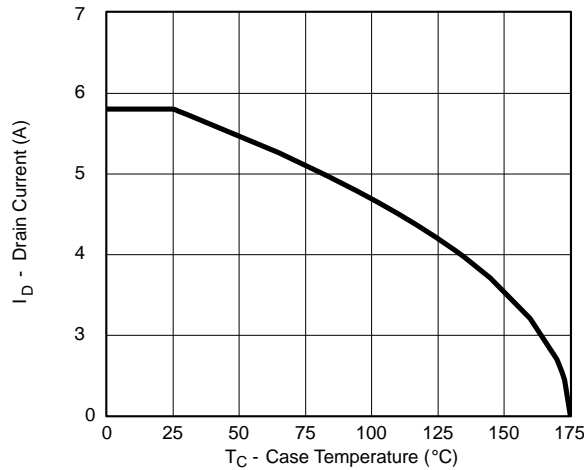
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



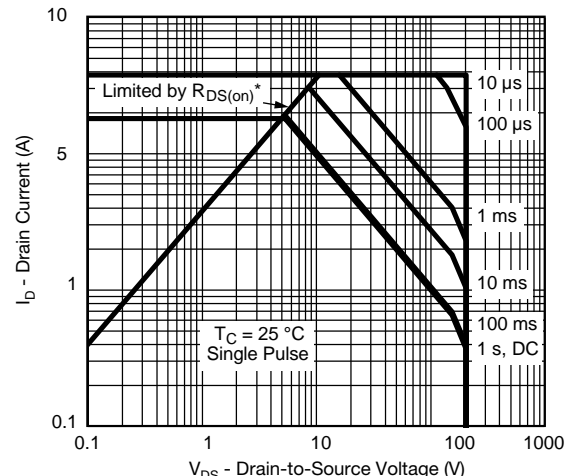
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

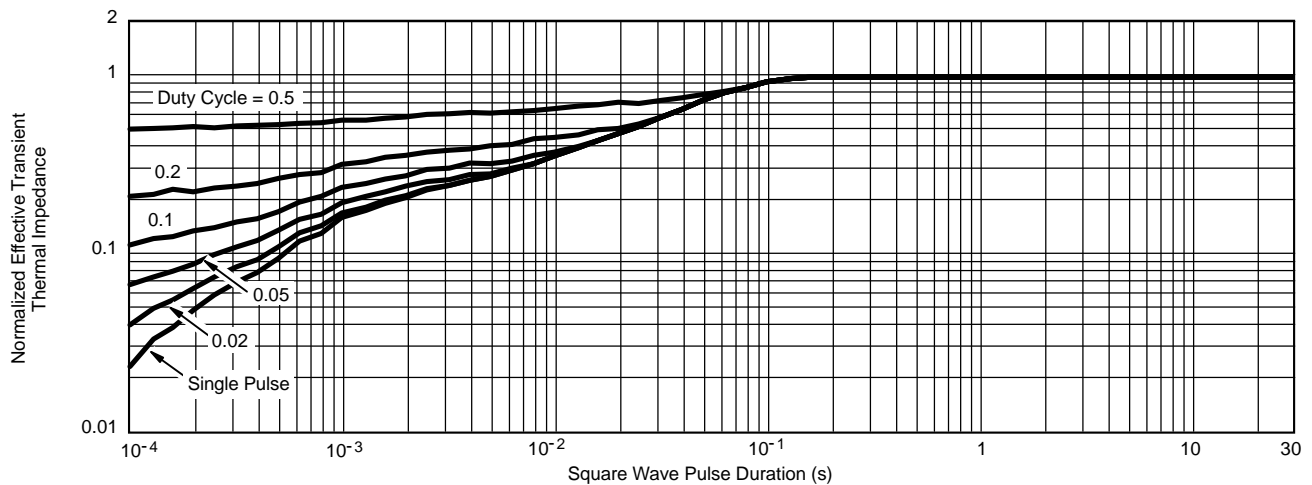


Maximum Avalanche Drain Current vs. Case Temperature



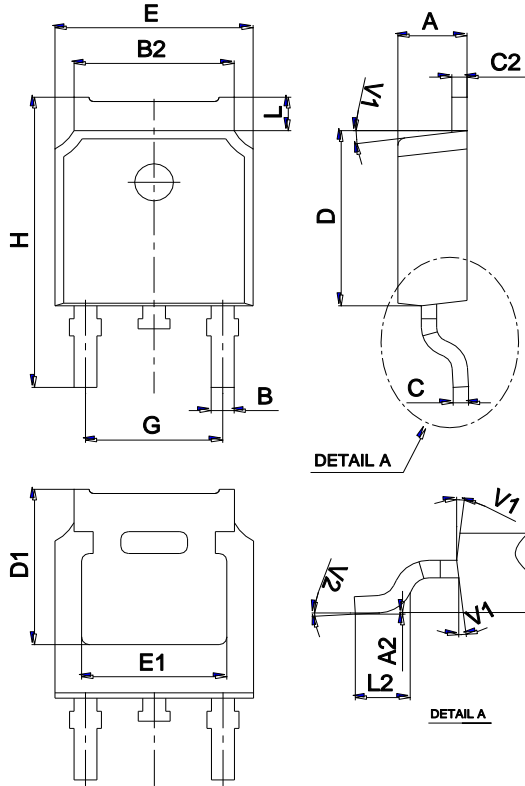
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

Package Mechanical Data TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Ordering information

Order code	Package	Baseqty	Delivery mode
12N10	TO-252	2500	Tape and reel