

205N10LS-VB Datasheet

N-Channel 100-V (D-S) MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.017 at $V_{GS} = 10$ V	30

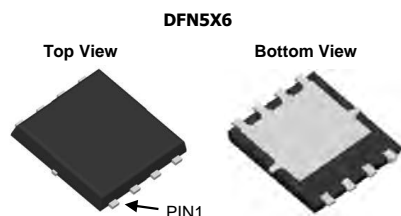
FEATURES

- Trench Power MOSFET
- 175 °C Junction Temperature
- Low Thermal Resistance Package
- 100 % R_g Tested

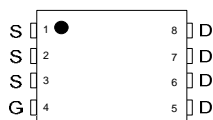

RoHS
 COMPLIANT

APPLICATIONS

- Isolated DC/DC Converters



Top View



N-Channel MOSFET

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 ($T_J = 150$ °C)	I_D	$T_C = 25$ °C	30
		$T_C = 70$ °C	19
		$T_A = 25$ °C	10 ^{b, c}
		$T_A = 70$ °C	8.5 ^{b, c}
Pulsed drain current ($t = 100$ μ s)	I_{DM}	75	A
Continuous source-drain diode current	I_S	$T_C = 25$ °C	56
		$T_A = 25$ °C	4.5 ^{b, c}
Single pulse avalanche current	I_{AS}	20	
Single pulse avalanche energy	E_{AS}	20	mJ
Maximum power dissipation	P_D	$T_C = 25$ °C	60
		$T_C = 70$ °C	40
		$T_A = 25$ °C	5 ^{b, c}
		$T_A = 70$ °C	3.2 ^{b, c}
Operating junction and storage temperature range	T_J, T_{stg}	-55 to +150	°C
Soldering recommendations (peak temperature) ^c		260	

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient ^b	R_{thJA}	20	25	°C/W
Maximum junction-to-case (drain)	R_{thJC}	1.6	2	

Notes

- Package limited
- Surface mounted on 1" x 1" FR4 board
- $t = 10$ s

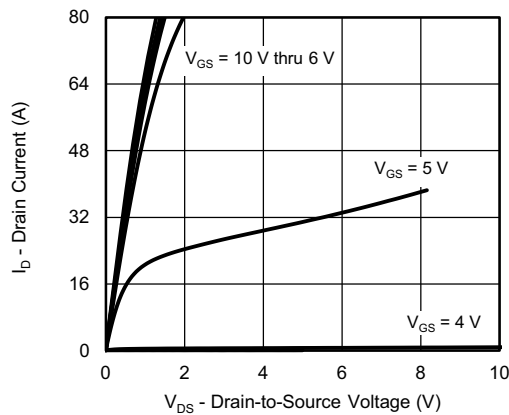
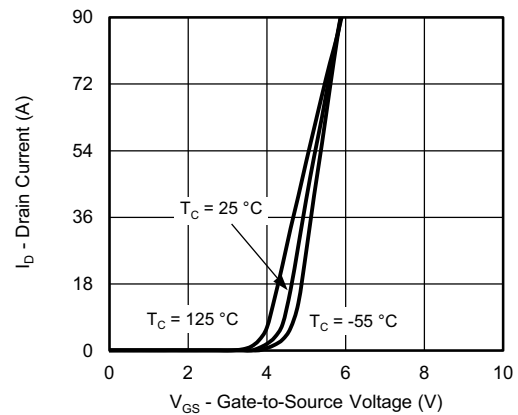
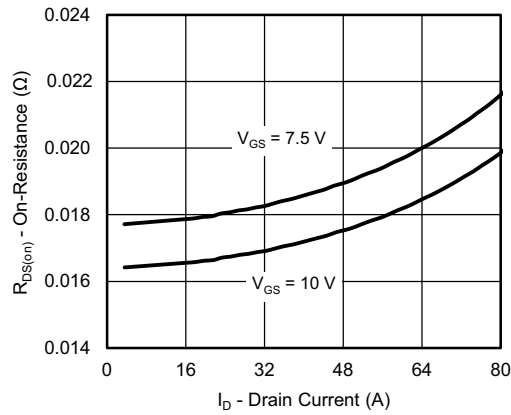
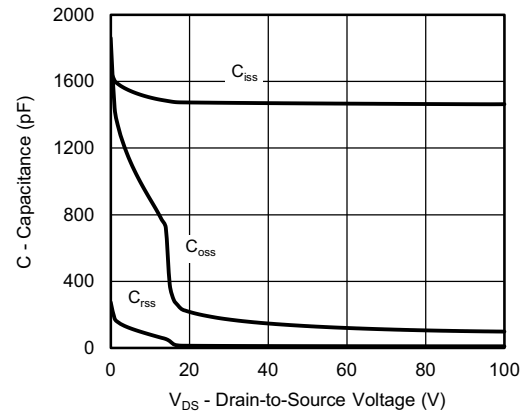
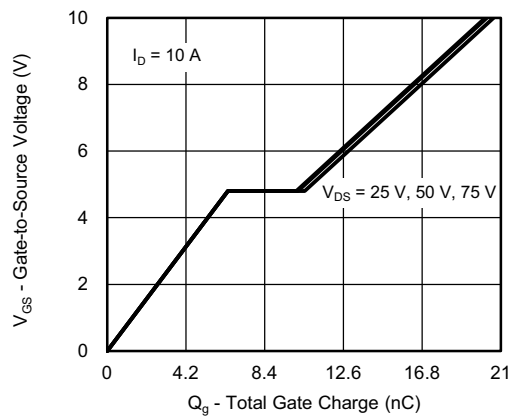
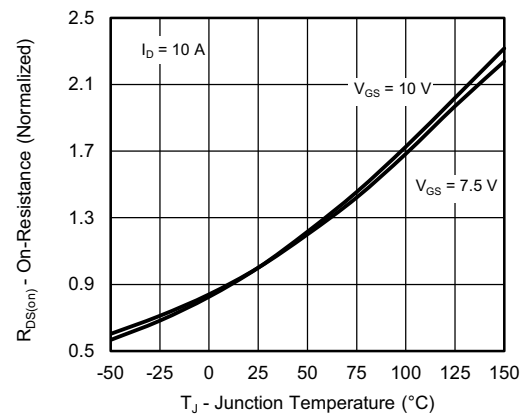
SPECIFICATIONS ($T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V_{DS}	$V_{GS} = 0\text{ V}$, $I_D = 250\text{ }\mu\text{A}$	100	-	-	V
V_{DS} temperature coefficient	$\Delta V_{DS}/T_J$	$I_D = 10\text{ mA}$	-	81	-	mV/ $^{\circ}\text{C}$
$V_{GS(th)}$ temperature coefficient	$\Delta V_{GS(th)}/T_J$	$I_D = 250\text{ }\mu\text{A}$	-	-7.5	-	
Gate-source threshold voltage						

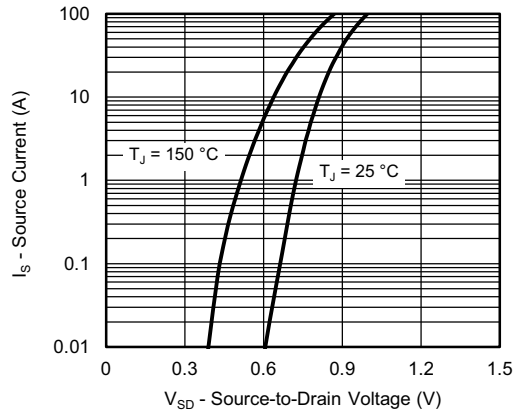
Notes

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

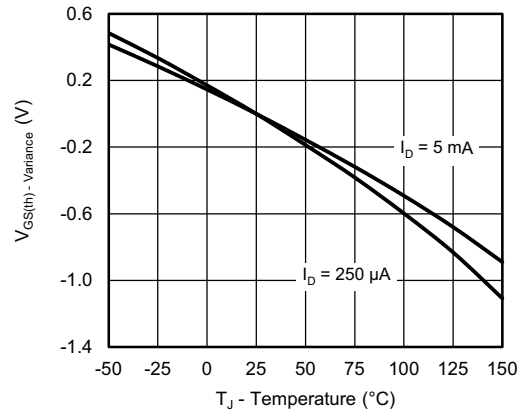
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**Output Characteristics****Transfer Characteristics****On-Resistance vs. Drain Current and Gate Voltage****Capacitance****Gate Charge****On-Resistance vs. Junction Temperature**

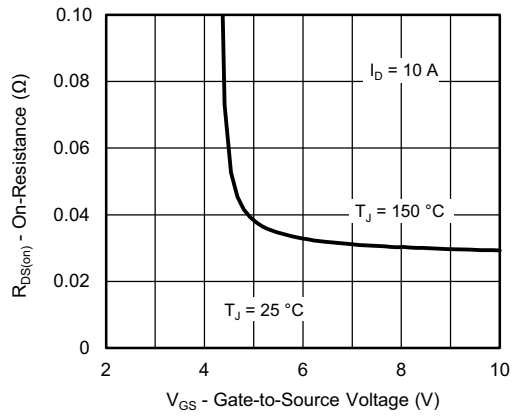
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



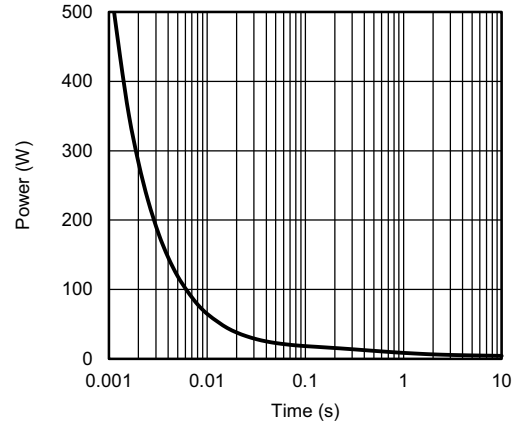
Source-Drain Diode Forward Voltage



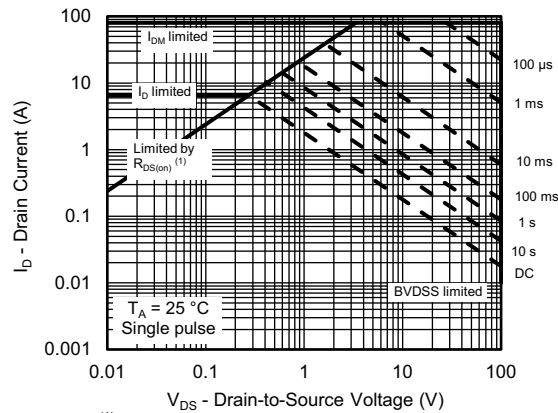
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient



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

Safe Operating Area, Junction-to-Ambient

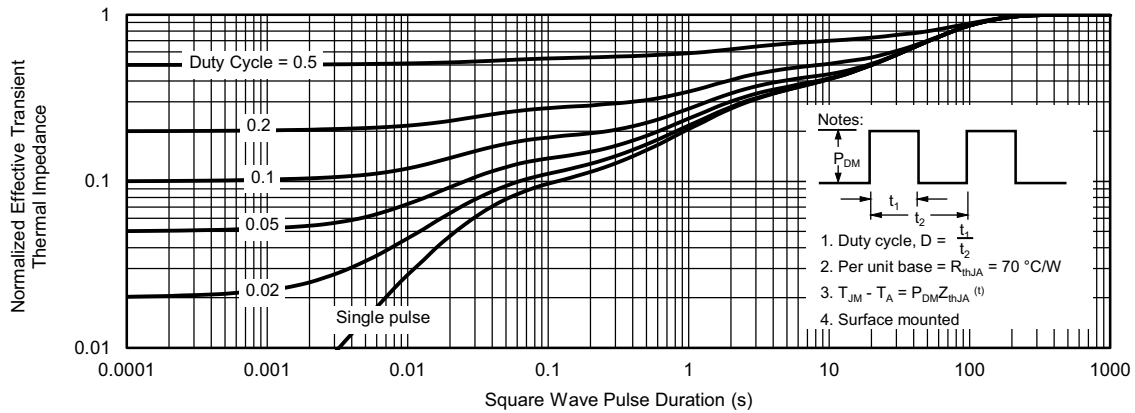
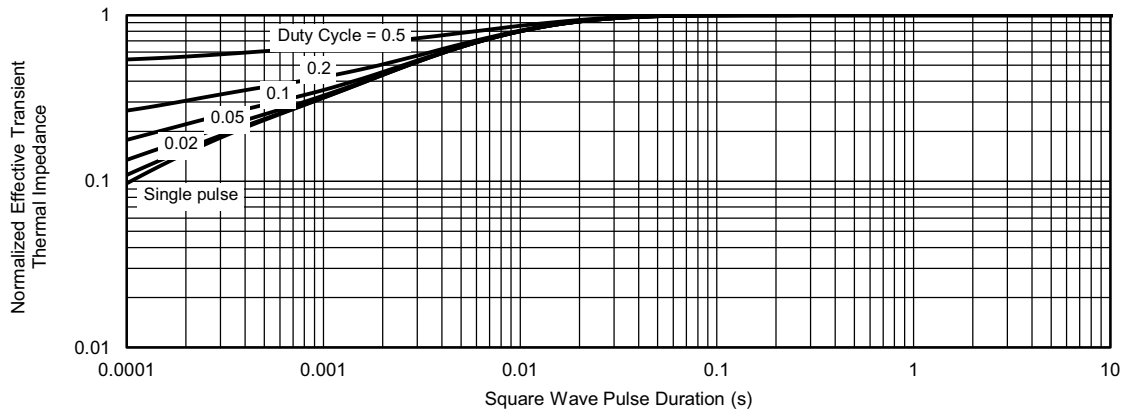
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

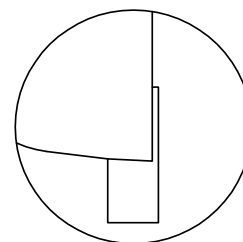
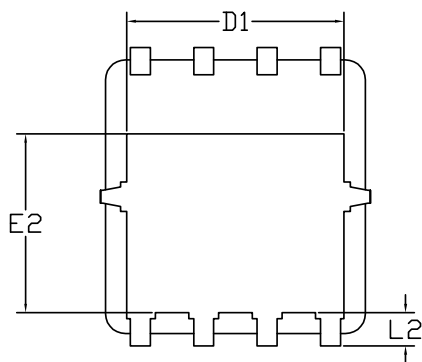
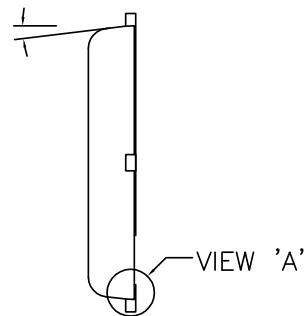
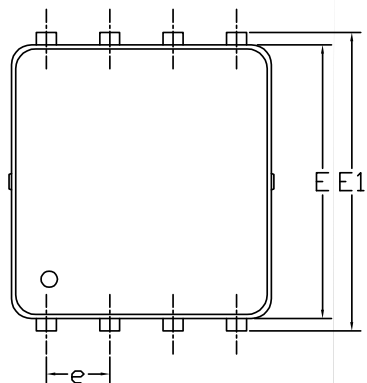
Current Derating ^a

Power, Junction-to-Case

Power, Junction-to-Ambient
Note

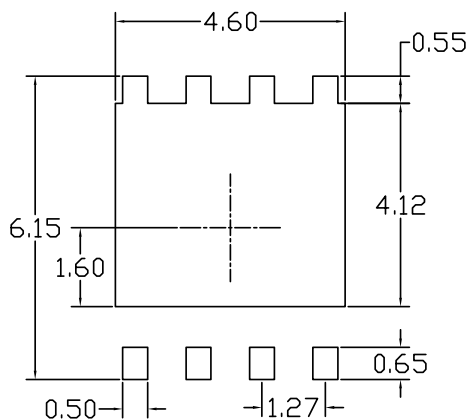
- a. The power dissipation P_D is based on $T_J \text{ max.} = 150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Normalized Thermal Transient Impedance, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Case



VIEW 'A'
(SCALE 5:1)

RECOMMENDED LAND PATTERN



S		NOM	MAX	DIMENSIONS IN INCHES		
				MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
	0.00		0.05	0.000	---	0.002
	0.30		0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
					0.205	
					0.171	
D1		4.35			0.219	
		5.55			0.238	
		6.05				
E2		3.625			0.143	
e		1.27 BSC		0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	---	0.15	0	---	0.006
L2		0.68 REF		0.027 REF		
	0°	---	10°	0°	---	10°

NOTE

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
2. CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

UNIT: mm

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