BMDFN2302

N-Channel MOSFET

»Features

V_{DS} = 20V

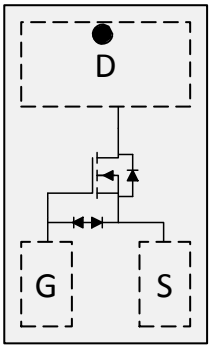
I_D = 0.71A

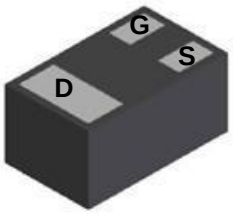
$R_{DS(ON)}$ @V_{GS} = 4.5V, TYP =220mΩ

$R_{DS(ON)}$ @V_{GS} = 2.5V, TYP =260mΩ

$R_{DS(ON)}$ @V_{GS} = 1.8V, TYP =315mΩ

»Pin Configurations





DFN1006-3L

»General Description

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package DFN1006-3L
- Small Signal Switching
- Small Moto Driver

»Absolute Maximum Ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±5		
Continuous Drain Current [ad]	T_A=25°C	I_D	0.71	0.66	A
	T_A=70°C		0.57	0.52	
Maximum Power Dissipation [ad]	T_A=25°C	P_D	0.32	0.27	W
	T_A=70°C		0.20	0.17	
Continuous Drain Current [bd]	T_A=25°C	I_D	0.67	0.62	A
	T_A=70°C		0.54	0.50	
Maximum Power Dissipation [bd]	T_A=25°C	P_D	0.28	0.24	W
	T_A=70°C		0.18	0.15	
Pulsed Drain Current [c]		I_{DM}	1.4		A
Operating Junction Temperature		T_J	150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

» Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	350	390	°C/W
	Steady State		395	455	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	397	435	
	Steady State		445	505	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	240	280	

a Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

b Surface mounted on FR4 board using minimum pad size, 1oz copper

c Pulse width<380μs, Single pulse

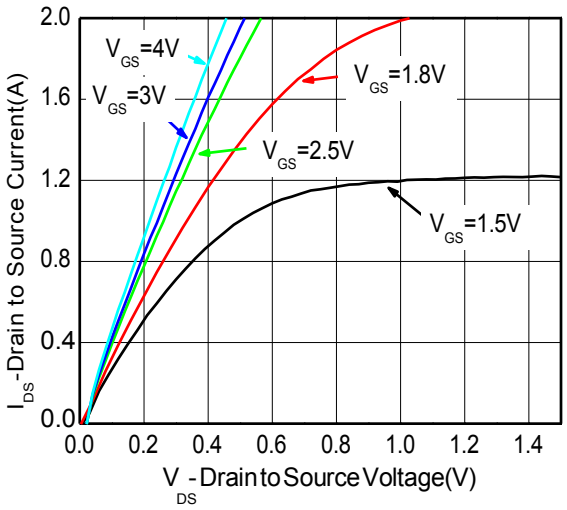
d Maximum junction temperature T_J=150° C.

e Pulse test: Pulse width <380 us duty cycle <2%.

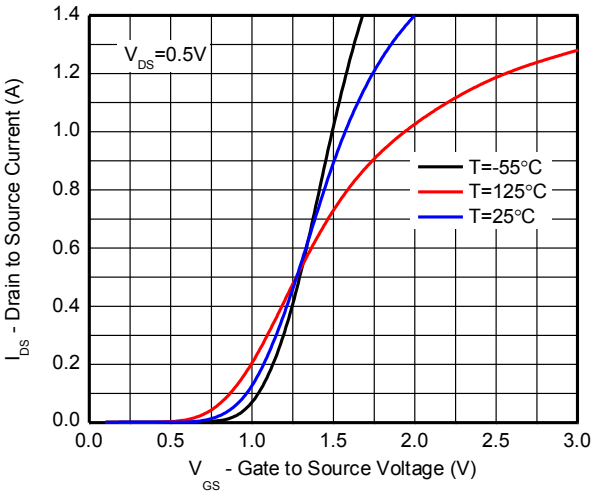
»Electrical Characteristics @T_A=25°C unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16 V, V_{GS} = 0V			1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} =±5V			±5	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.45	0.58	0.85	V
Drain-to-source On-resistance [e]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.55A		220	420	mΩ
		V_{GS} = 2.5V, I_D = 0.45A		260	500	
		V_{GS} = 1.8V, I_D = 0.35A		315	600	
Forward Transconductance	g_{FS}	V_{DS} = 5 V, I_D = 0.55A		2.0		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 10 V		50.6		pF
Output Capacitance	C_{OSS}			13.2		
Reverse Transfer Capacitance	C_{RSS}			8.3		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V, I_D = 0.55A		0.87		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.06		
Gate-to-Source Charge	Q_{GS}			0.15		
Gate-to-Drain Charge	Q_{GD}			0.27		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DS} = 10V, I_D =0.55A, R_G=6 Ω		16		ns
Rise Time	tr			11.6		
Turn-Off Delay Time	td(OFF)			36		
Fall Time	tf			11		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 0.35A	0.5	0.7	1.1	V

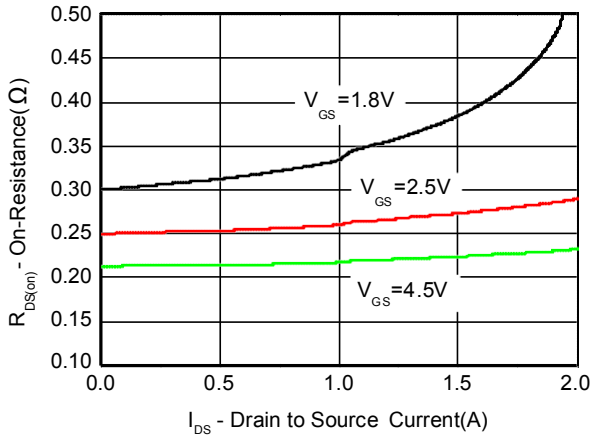
»Typical Performance Characteristics ((TJ = 25 °C, unless otherwise noted))



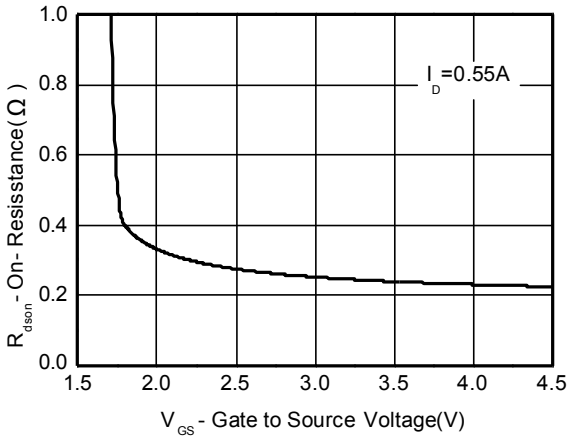
Output characteristics



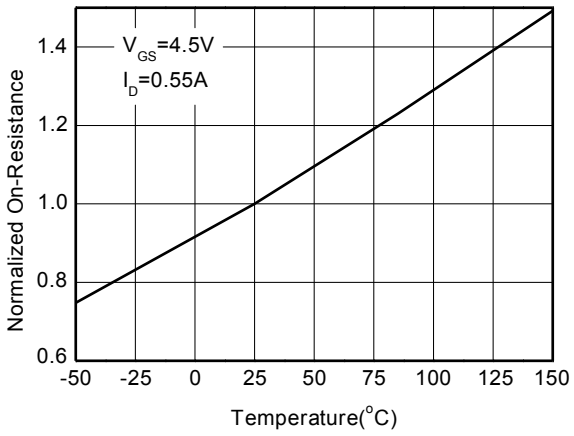
Transfer characteristics



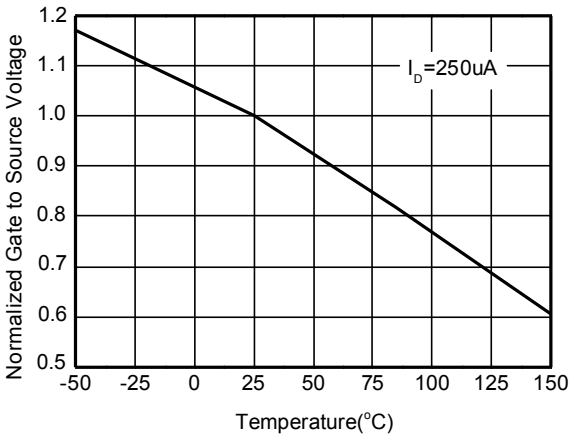
On-Resistance vs. Drain current



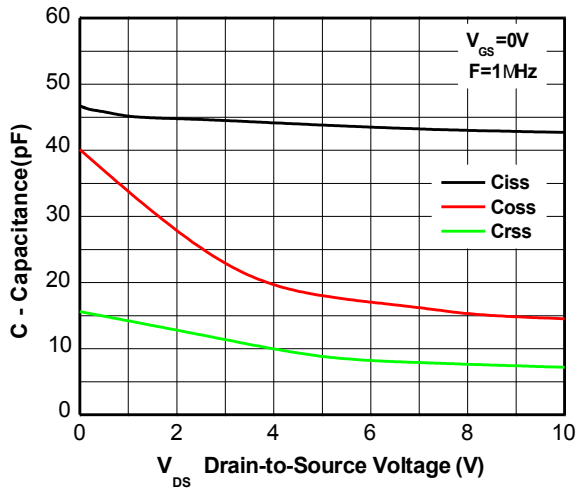
On-Resistance vs. Gate-to-Source voltage



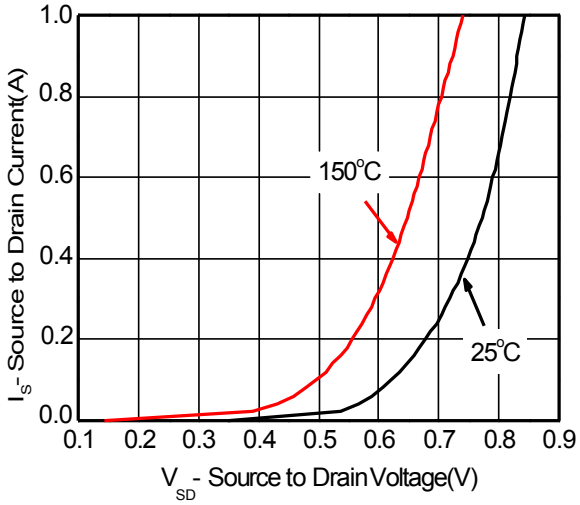
On-Resistance vs. Junction temperature



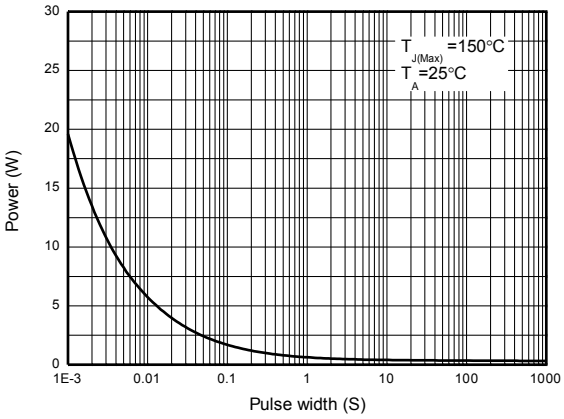
Threshold voltage vs. Temperature



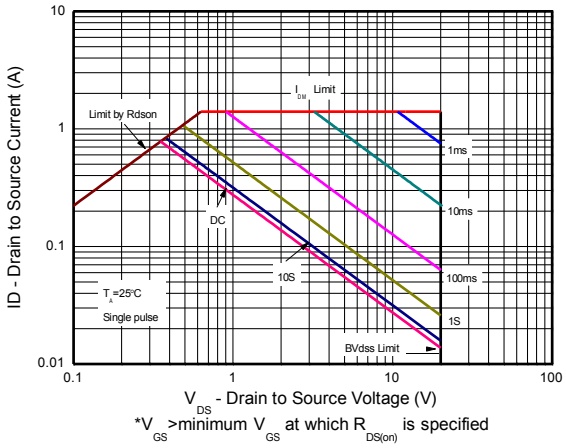
Capacitance



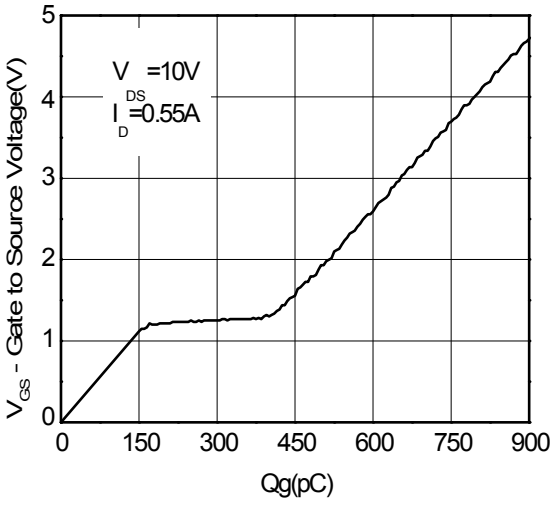
Body diode forward voltage

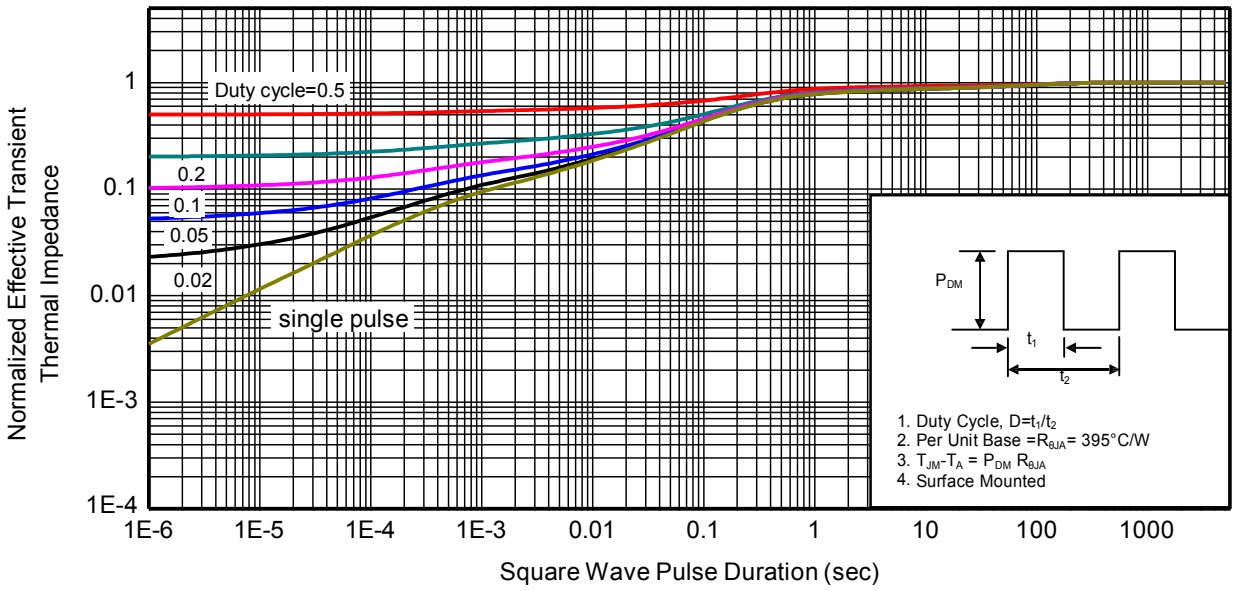


Single pulse power



Safe operating power

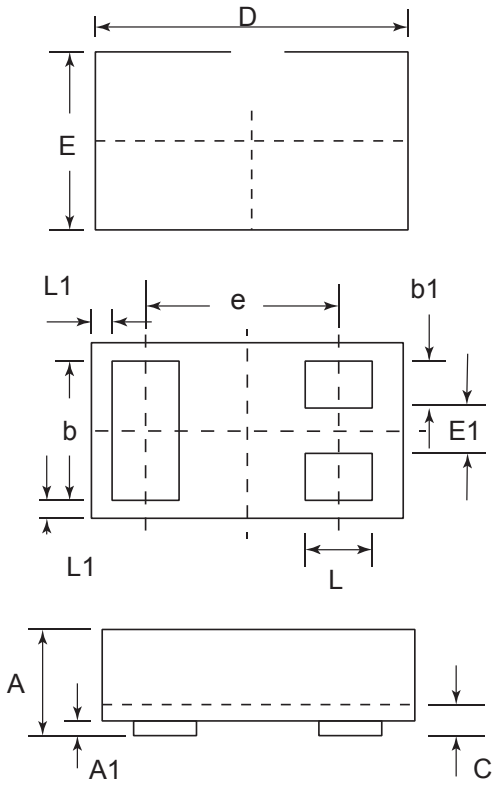




Transient thermal response(Junction-to-Ambient)

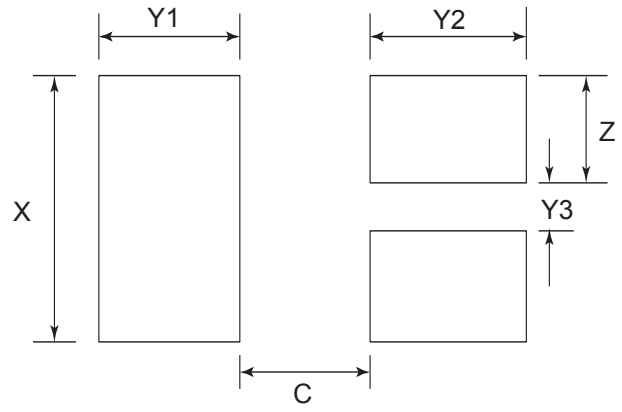
»Package Information

DFN1006-3L



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.45	0.50	0.55
b1	0.10	0.15	0.20
C	0.12	0.15	0.18
D	0.95	1.00	1.05
e	0.65 BSC		
E	0.55	0.60	0.65
E1	0.15	0.20	0.25
L	0.20	0.25	0.30
L1	0.05REF		

Suggested Land Pattern:



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	0.25	0.010
X	0.65	0.024
Y1	0.50	0.020
Y2	0.50	0.020
Y3	0.25	0.010
Z	0.20	0.008

»Ordering information

Order code	Package	Marking	Base qty	Deliverymode
BMDFN2302	DFN1006-3L	M20	10K	Tape andreel

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