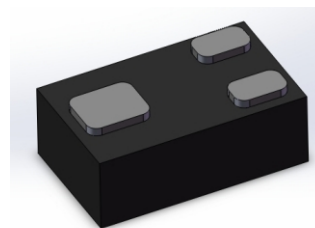


Single N-Channel, 20V, 0.55A, Power MOSFET

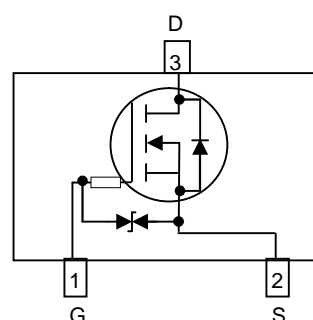
V _{DS} (V)	Typical R _{ds(on)} ()
20	0.180@ V _{GS} =4.5V
	0.220@ V _{GS} =2.5V
	0.300@ V _{GS} =1.8V



FBP -03E

Descriptions

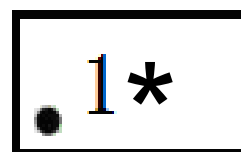
The WNM2047 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R_{DS (ON)} with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM2047 is Pb-free.



Pin configuration (Top view)

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package FBP -03E



1 = Device Code
* = Month (A~Z)

Marking

Applications

- Small Signal Switching
- Small Moto Driver

Order information

Device	Package	Shipping
WNM2047-3/TR	FBP-03E	10K/Reel&Tape

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 ^{a d}	$T_A=25^\circ\text{C}$	I_D	0.84	0.78	A
	$T_A=70^\circ\text{C}$		0.67	0.62	
Maximum Power Dissipation ^{a d}	$T_A=25^\circ\text{C}$	P_D	0.32	0.27	W
	$T_A=70^\circ\text{C}$		0.20	0.17	
Continuous Drain Current ^{b d}	$T_A=25^\circ\text{C}$	I_D	0.79	0.74	A
	$T_A=70^\circ\text{C}$		0.63	0.59	
Maximum Power Dissipation ^{b d}	$T_A=25^\circ\text{C}$	P_D	0.28	0.24	W
	$T_A=70^\circ\text{C}$		0.18	0.15	
Pulsed Drain Current ^c		I_{DM}	1.4		A
Operating Junction Temperature		T_J	150		$^\circ\text{C}$
Lead Temperature		T_L	260		$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150		$^\circ\text{C}$

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	t 10 s	R_{JA}	350	390	$^\circ\text{C/W}$
	Steady State		395	455	
Junction-to-Ambient Thermal Resistance ^b	t 10 s	R_{JA}	397	435	
	Steady State		445	505	
Junction-to-Case Thermal Resistance		R_{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 < 380 μs , Single pulse

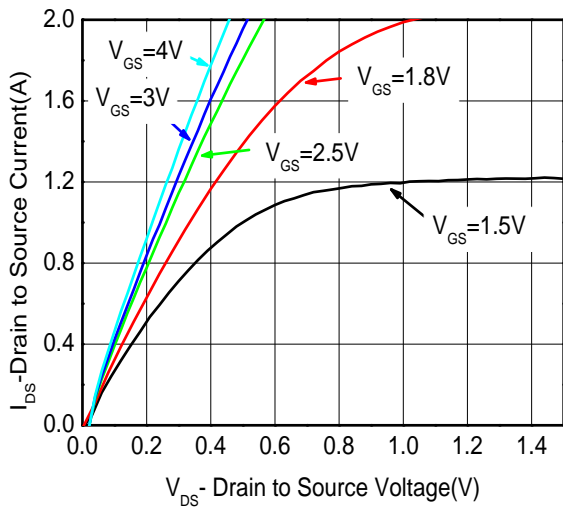
d Maximum junction temperature $T_J=150^\circ\text{C}$.

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

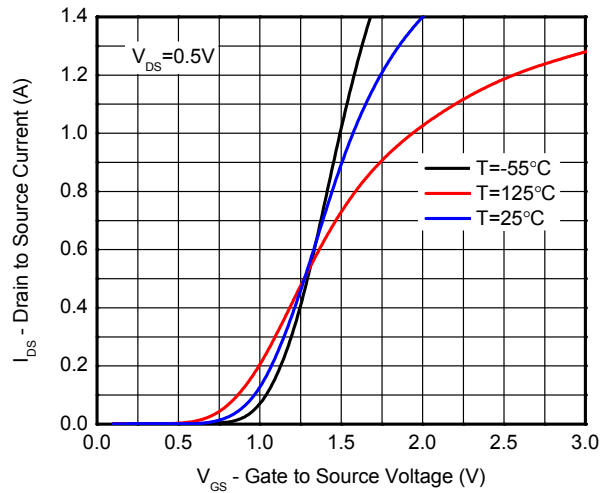
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16\text{ V}, V_{GS} = 0\text{ V}$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 5\text{ V}$			± 5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	0.45	0.58	0.85	V
Drain-to-source On-resistance ^e	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 0.55\text{ A}$		180	800	m
		$V_{GS} = 2.5\text{ V}, I_D = 0.45\text{ A}$		220	1000	
		$V_{GS} = 1.8\text{ V}, I_D = 0.35\text{ A}$		300	1500	
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{ V}, I_D = 0.55\text{ A}$		2.0		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = 10\text{ V}$		50.6		pF
Output Capacitance	C_{OSS}			13.2		
Reverse Transfer Capacitance	C_{RSS}			8.3		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V}, I_D = 0.55\text{ A}$		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	$t_d(ON)$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V}, I_D = 0.55\text{ A}, R_G = 6$		34		ns
Rise Time	t_r			97.6		
Turn-Off Delay Time	$t_d(OFF)$			606		
Fall Time	t_f			318		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 0.35\text{ A}$	0.5	0.7	1.1	V

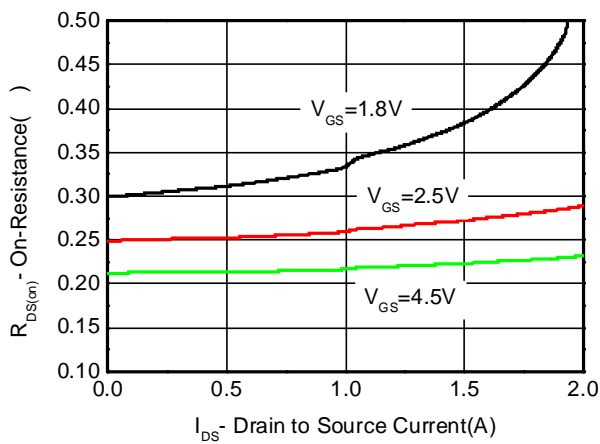
Typical Characteristics (Ta=25°C, unless otherwise noted)



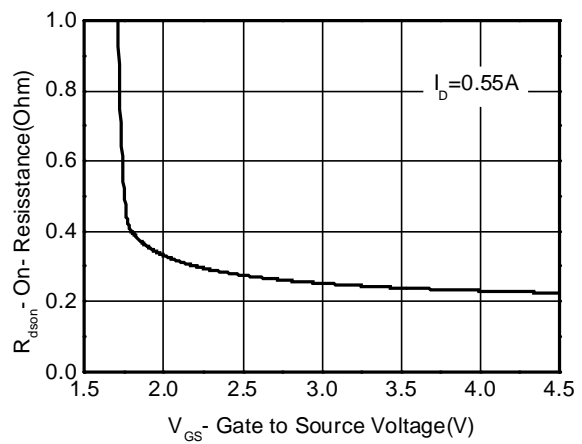
Output characteristics



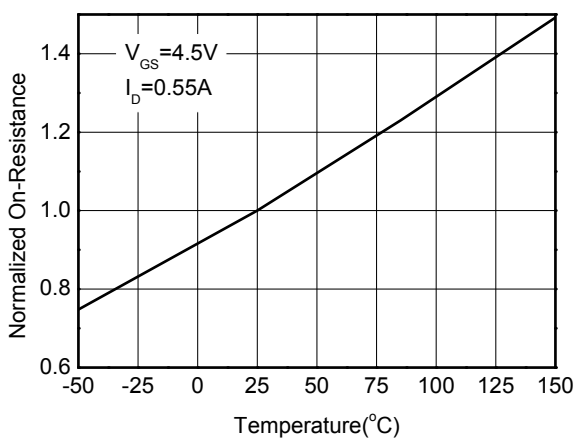
Transfer characteristics



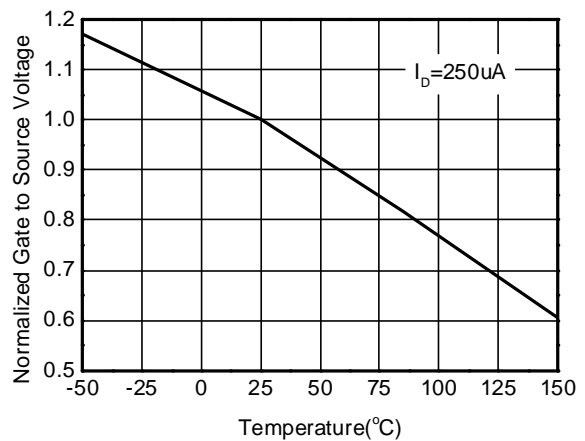
On-Resistance vs. Drain current



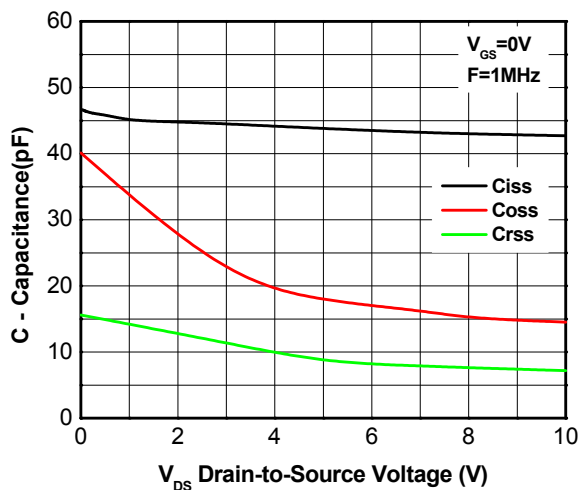
On-Resistance vs. Gate-to-Source voltage



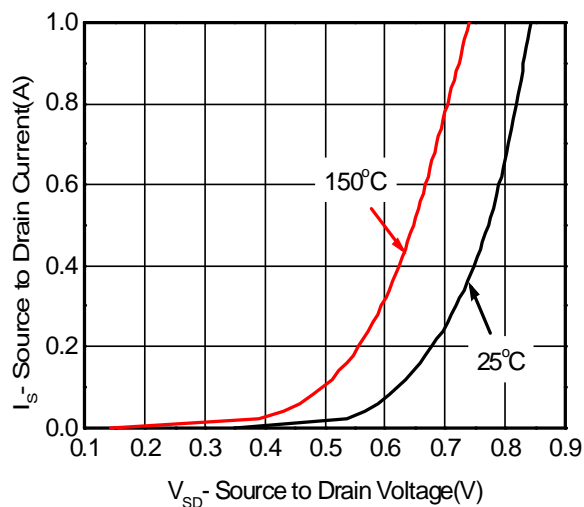
On-Resistance vs. Junction temperature



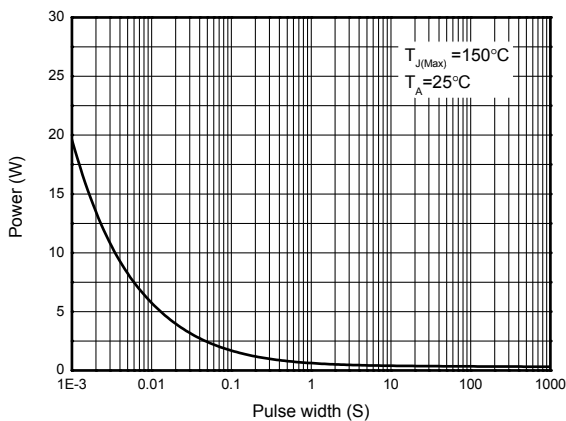
Threshold voltage vs. Temperature



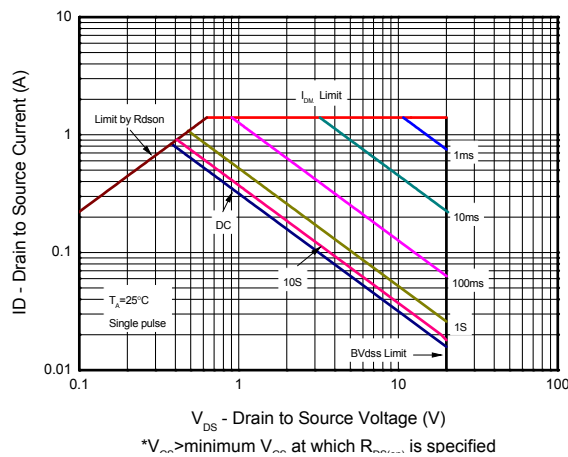
Capacitance



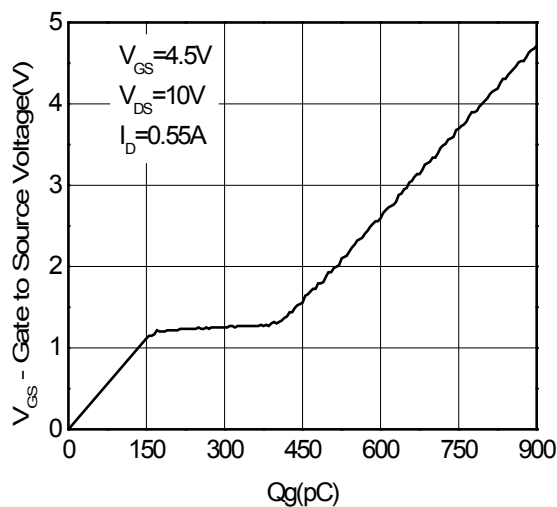
Body diode forward voltage

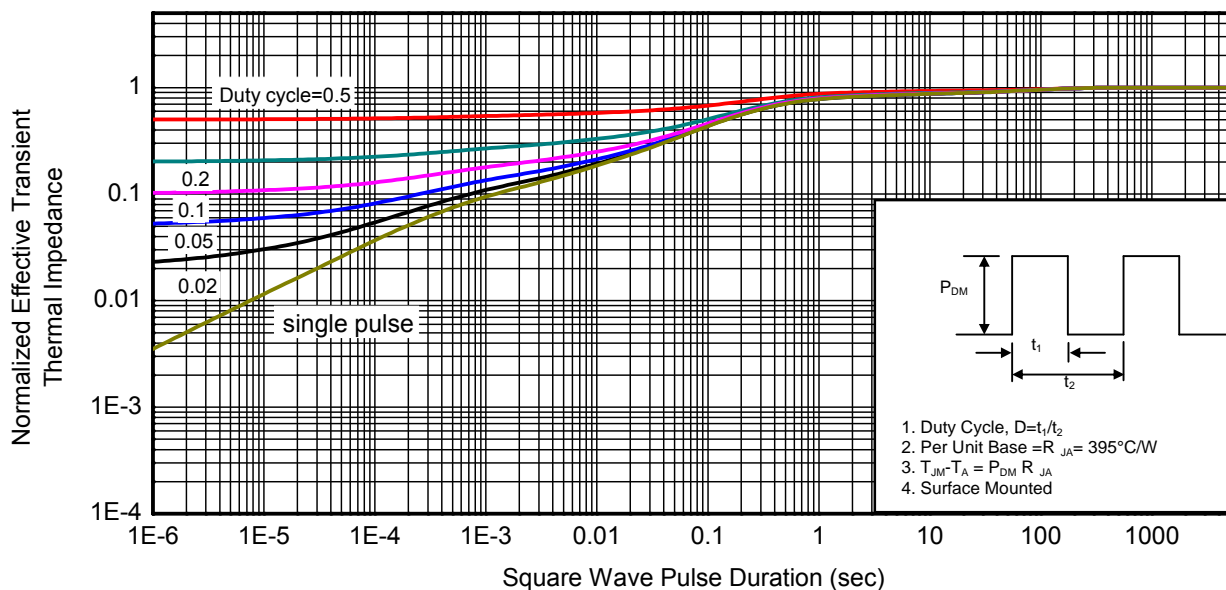


Single pulse power



Safe operating power

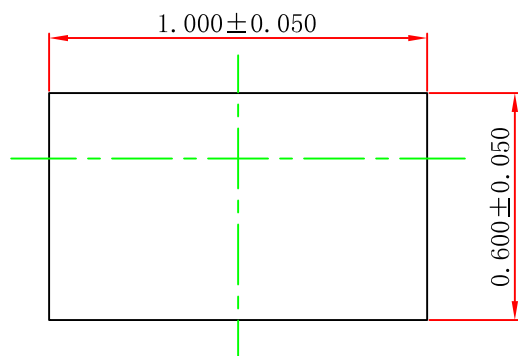




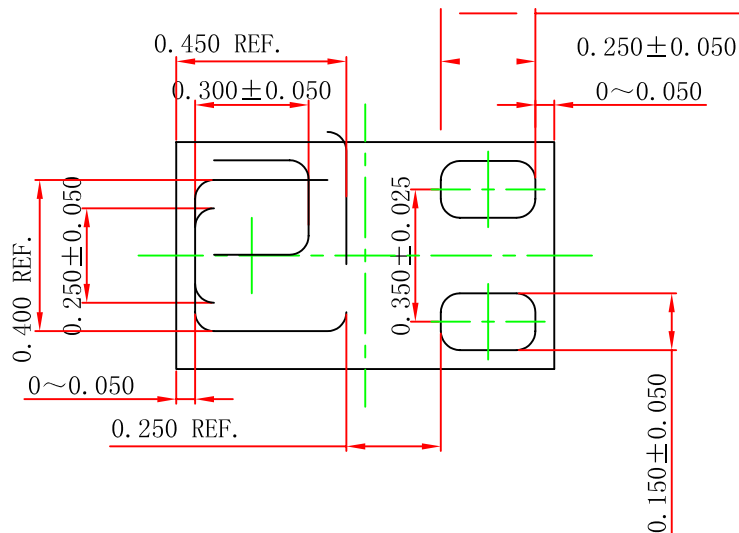
Transient thermal response (Junction-to-Ambient)

Package outline dimensions

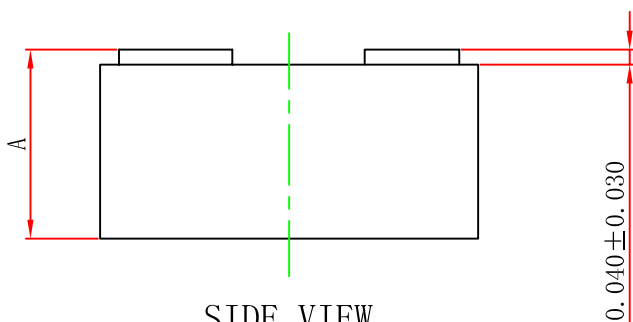
FBP-03E



TOP VIEW



BOTTOM VIEW

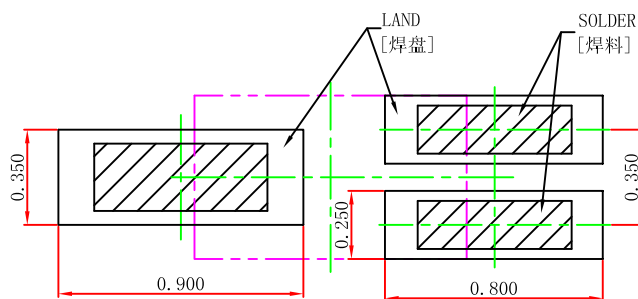


SIDE VIEW

	MIN.	NORM.	MAX.
A	0.360	0.390	0.430
	0.450	0.500	0.550

LAND PATTERN RECOMMENDATION

[推荐焊盘图]



NOTE [注]:

1、SOLDER THICKNESS IS 0.150mm;

[焊料厚度为0.150mm;]

2、THE SOLDER AREA OCCUPYS THE 50% OF THE LAND.

[焊料面积占焊盘面积的50%。]