/ Descriptions

TO-252 N MOS

N-CHANNEL MOSFET in a TO-252 Plastic Package.

/ Features

V_{DS} = 40V I_D = 78A (V_{GS} = ±20V)

$R_{DS(ON)}$@10V≤5.5mΩ(Typ. 4.9mΩ)

$R_{DS(ON)}$@4.5V≤10mΩ(Typ. 6.6mΩ)

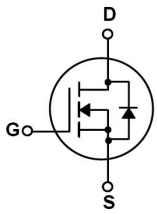
HF Product.

/ Applications

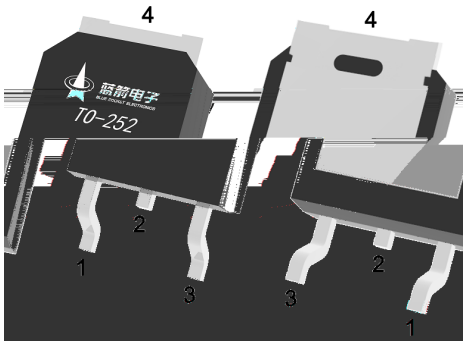
DC/DC

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	40	V
Drain Current		I_D(Tc=25℃)	78	A
Drain Current - Pulsed		I_{DM}	174	A
Gate-Source Voltage		V_{GS}	±20	V
Single Pulsed Avalanche Energy		E_{AS}	841	mJ
Avalanche Current		I_{AS}	29	A
Power Dissipation		P_D(Tc=25℃)	55	W
Operating and Storage Temperature Range		T_J,T_{stg}	-55 to 150	
Junction-to-Ambient	t≤10	$R_{\theta JA}$	20	℃/W
Junction-to-Ambient	Steady-State		50	
Junction-to-Case	Steady-State	$R_{\theta JC}$	2.27	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V	I_D=250μA	40	48.5		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V	V_{GS}=0V			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V	V_{DS}=0V			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}	I_D=250μA	1.0	1.4	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V	I_D=20A		4.9	5.5	mΩ
		V_{GS}=4.5V	I_D=10A		6.6	10	mΩ
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V	I_S=1A			1.2	V
Input Capacitance	C_{iss}	V_{DS}=25V f=1.0MHz	V_{GS}=0V		3220		pF
Output Capacitance	C_{oss}				215		
Reverse Transfer Capacitance	C_{rss}				190		
Gate resistance	R_g	V_{GS}=0V f=1MHz	V_{DS}=0V		2.3		Ω
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V I_D=10A	V_{DS}=20V		59.1		nC
Total Gate Charge	$Q_{g(4.5V)}$				28.3		
Gate Source Charge	Q_{gs}				5.4		
Gate Drain Charge	Q_{gd}				10.0		

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=20V I_D=10A R_g=3Ω		11.8		ns
Turn-On Rise Time	t_r			15.1		
Turn-Off Delay Time	$t_{d(off)}$			57.6		
Turn-Off Fall Time	t_f			16.9		

/ Electrical Characteristic Curve

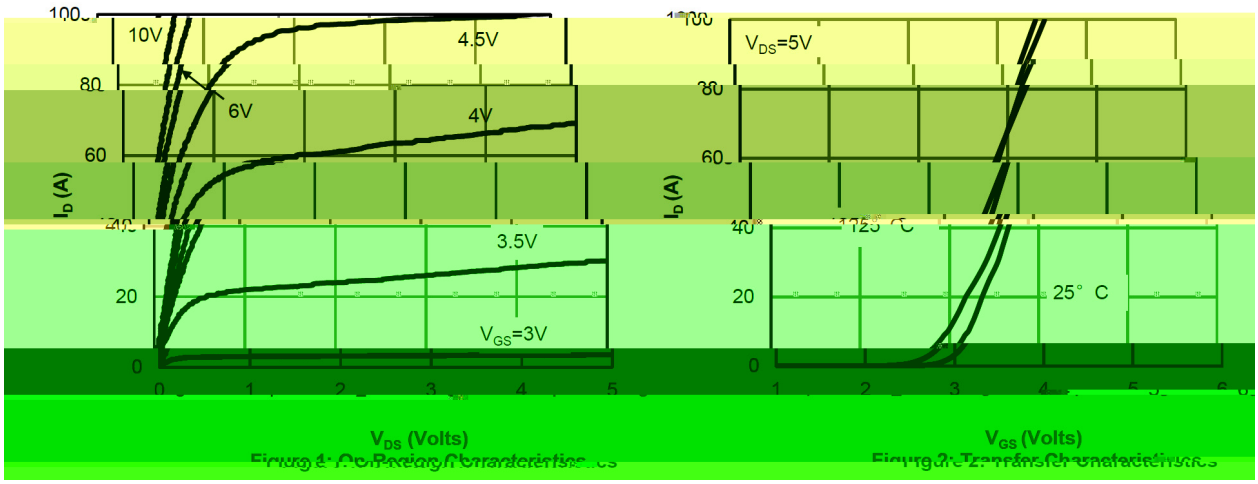
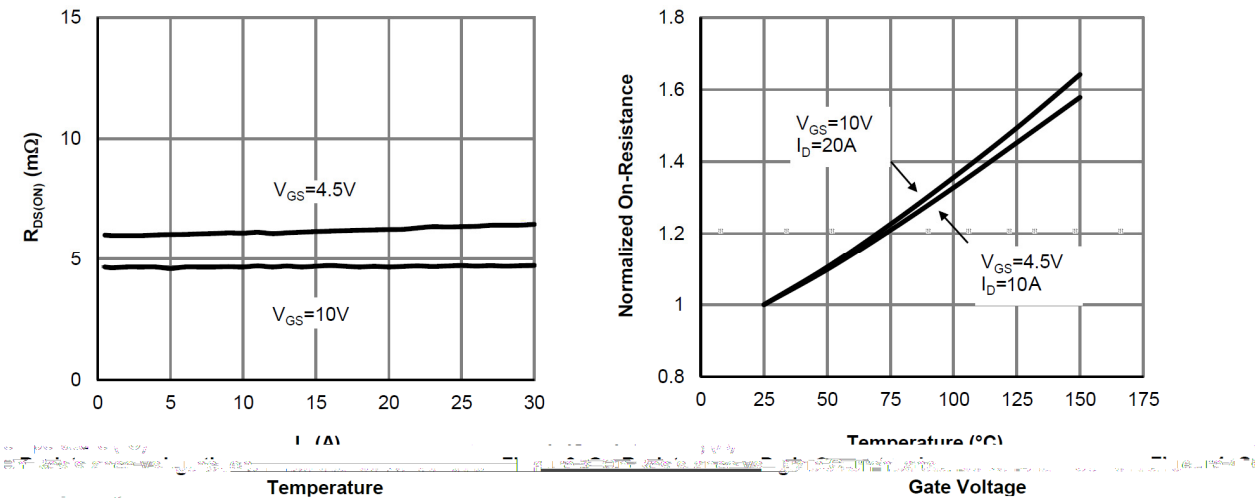


Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics



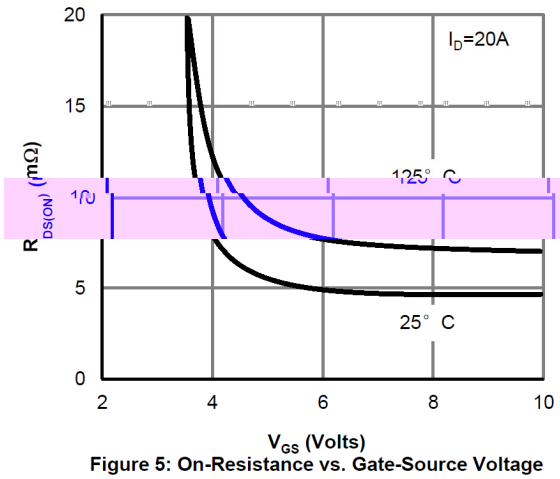


Figure 5: On-Resistance vs. Gate-Source Voltage

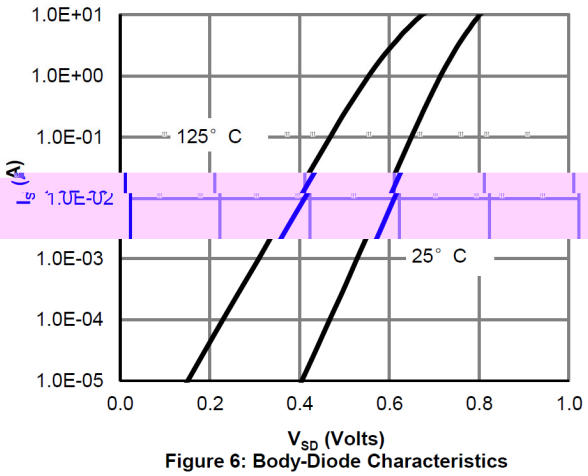
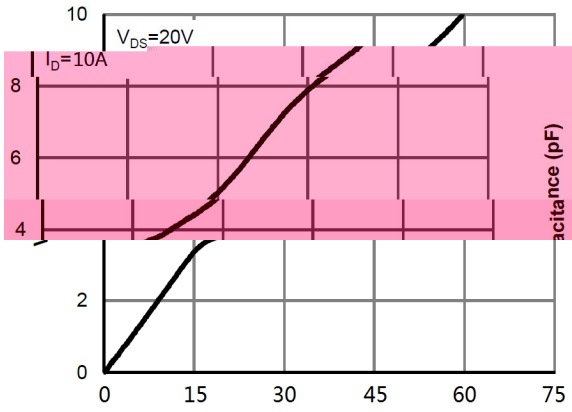


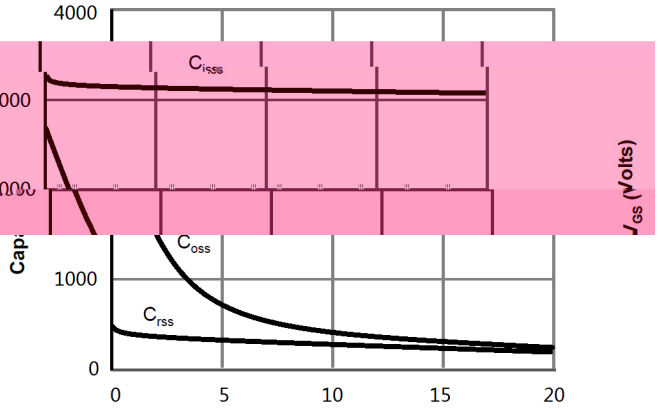
Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve



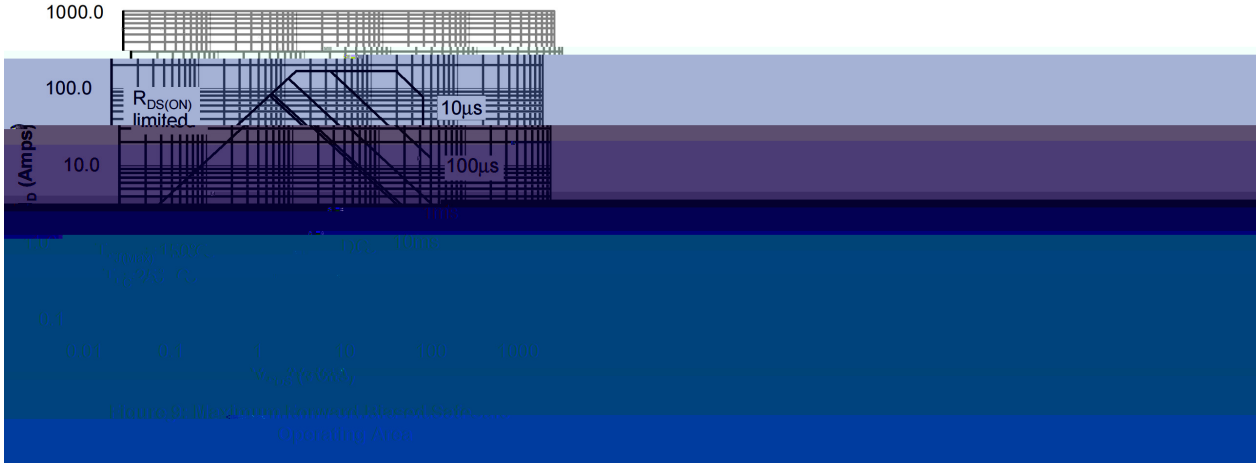
Q_g (nC)

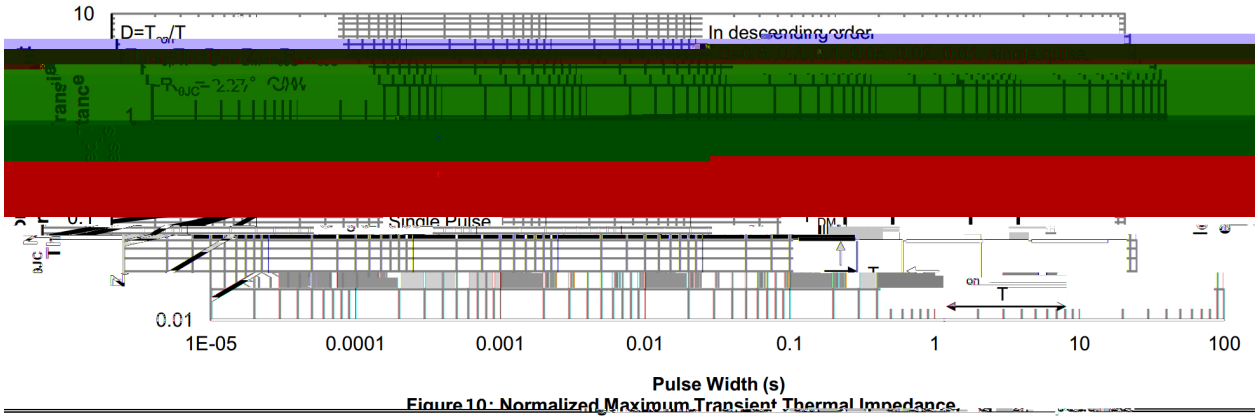
Figure 7: Gate-Charge Characteristics



V_{DS} (Volts)

Figure 8: Capacitance Characteristics

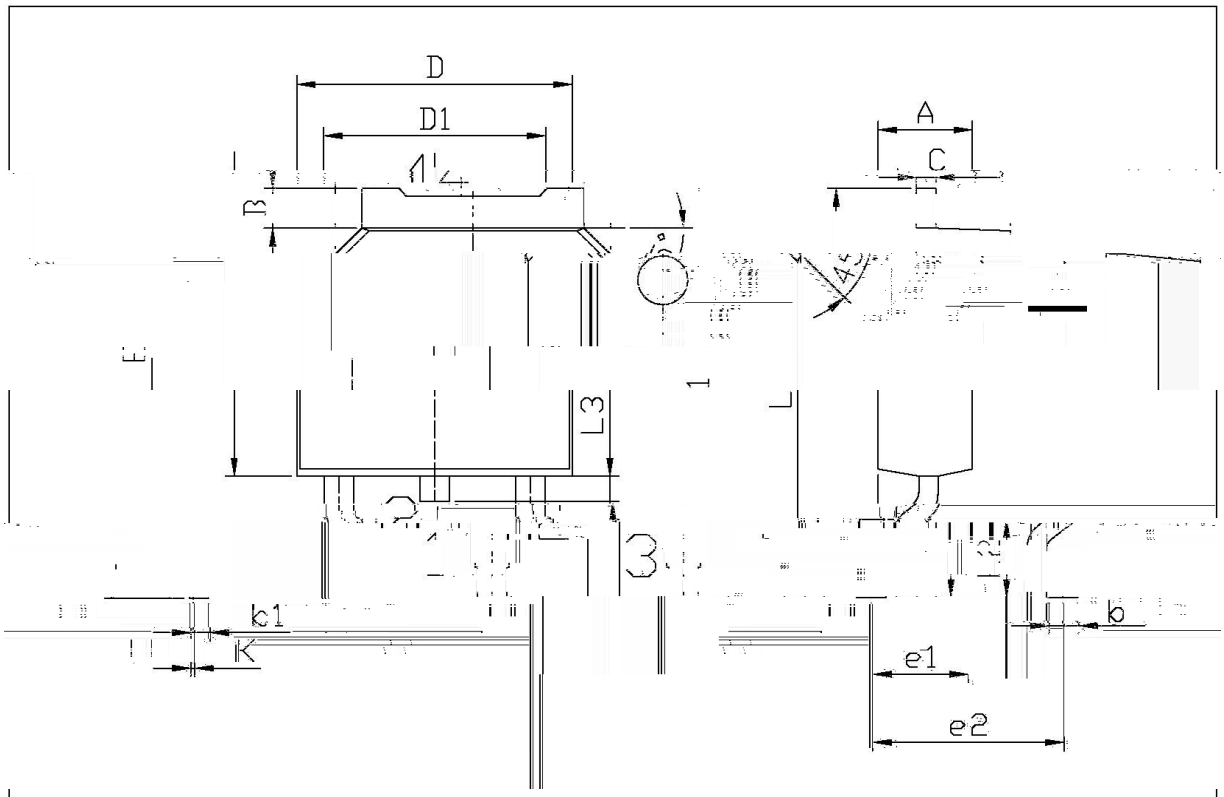




Pulse Width (s)

Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

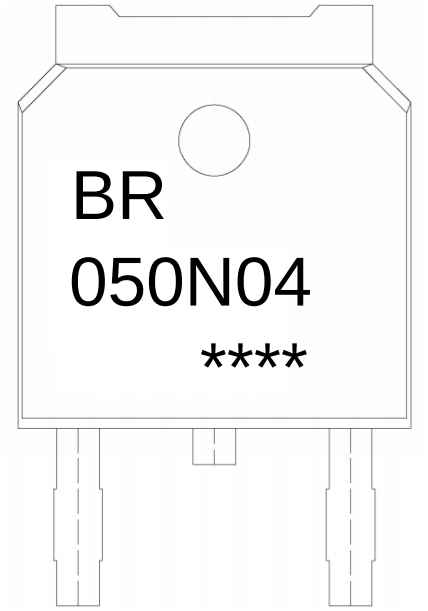


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
5.95	6.25		A	2.20	2.40	E
2.24	2.34		B	0.95	1.25	e1
9.85	10.35		b1	0.45	0.55	L1
	0.45	0.55		1.70	3.00
6.75	L3	0.60	0.90	D1	6.45	
5.60	K			L1	5.10	

TO-252

/ Marking Instructions



BR

050N04

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Note:

BR:	Company Code
050N04:	Product Type Code
****:	Lot No. Code, code change with Lot No.