/ Descriptions

TO-252 N

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

/ Features

V_{DS}(V)=40V I_D=70A

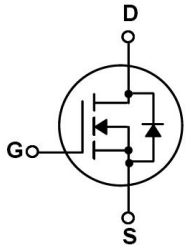
$R_{DS(ON)}$@10V<6mΩ(Typ. 5.6mR)

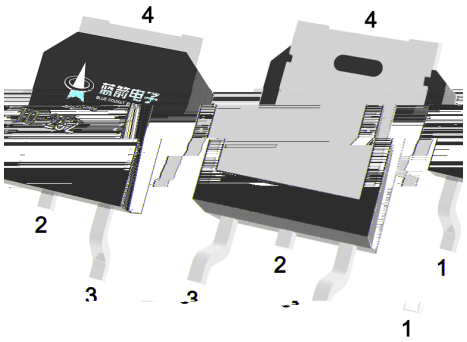
$R_{DS(ON)}$@4.5V<12mΩ(Typ. 10.8mR)

HF Product.

/ Applications

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.





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℃)	70	A
Drain Current - Pulsed		I_{DM}	159	A
Gate-Source Voltage		V_{GS}	±20	V
Avalanche Current		I_{AS}	24.5	A
Single Pulsed Avalanche Energy(L=0.5mH)		E_{AS}	192	mJ
Power Dissipation		P_D(Tc=25℃)	50	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	
Thermal Resistance-Junction to Ambient	t≤10s	$R_{\theta JA}$	20	℃/W
	Steady-State		50	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.5	

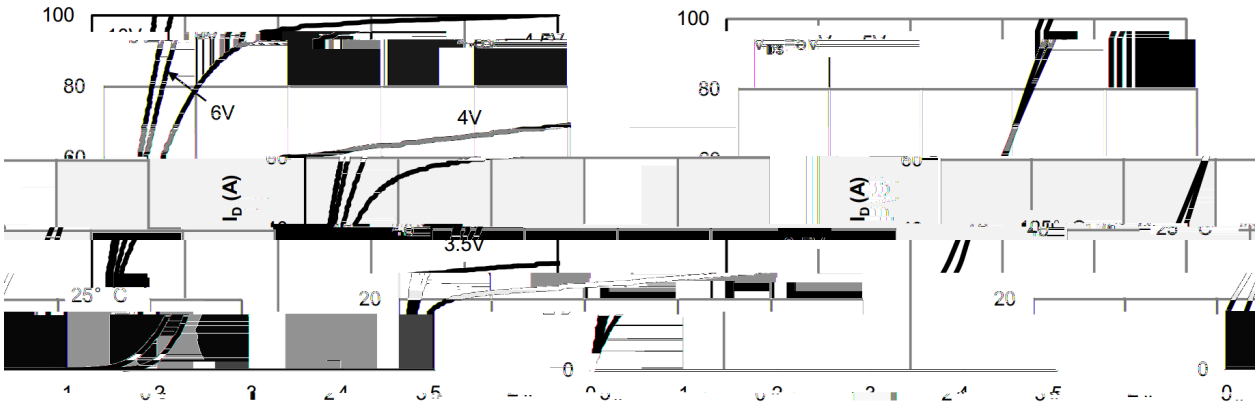
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	40	46		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V V_{GS}=0V			1.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1.0	1.6	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=20A		5.6	6	mΩ
		V_{GS}=4.5V I_D=10A		8.6	12	
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=1A			1.4	V
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V, f=1MHz		2.1		Ω
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		2200		pF
Output Capacitance	C_{oss}			265		
Reverse Transfer Capacitance	C_{rss}			145		
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V, V_{DS}=20V, I_D=20A		22		nC
Total Gate Charge	$Q_{g(4.5V)}$			8.9		
Gate Source Charge	Q_{gs}			5.7		
Gate Drain Charge	Q_{gd}			3.1		

/ Electrical Characteristics(Ta=25)

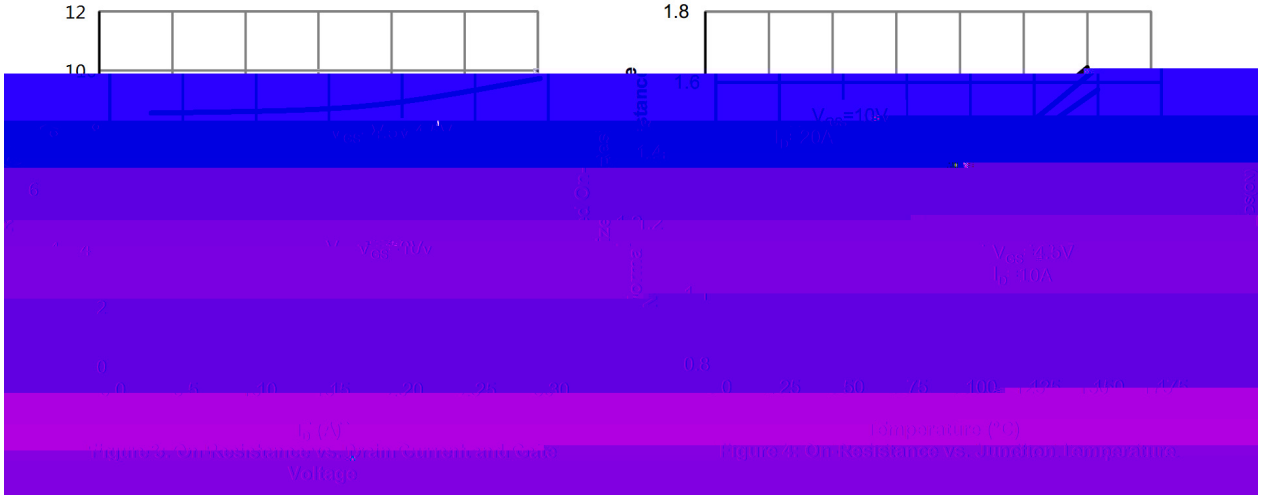
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=20V R_L=1.0Ω R_{GEN}=3Ω		7.8		ns
Turn-On Rise Time	t_r			2.1		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	t_f			3.2		

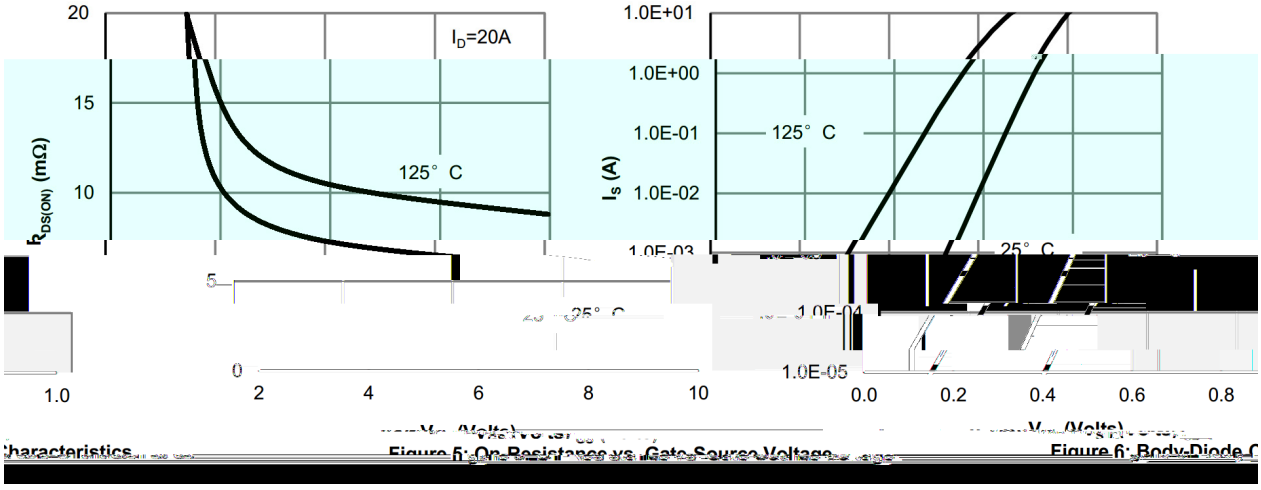
/ Electrical Characteristic Curve



V_{GS} (Volts)
Figure 2: Transfer Characteristics

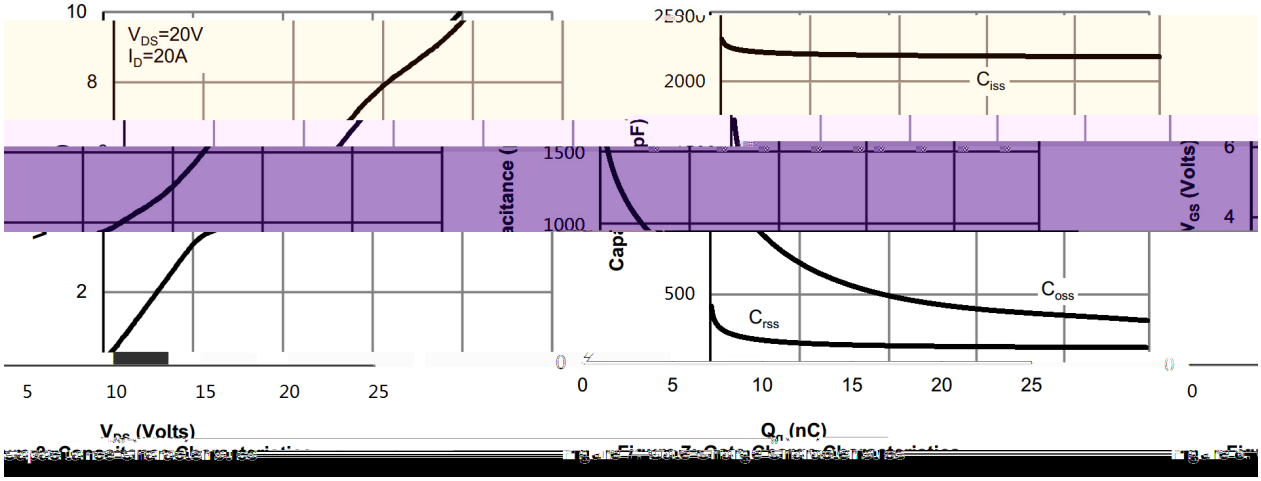
V_{DS} (Volts)
Figure 1: On-Region Characteristics

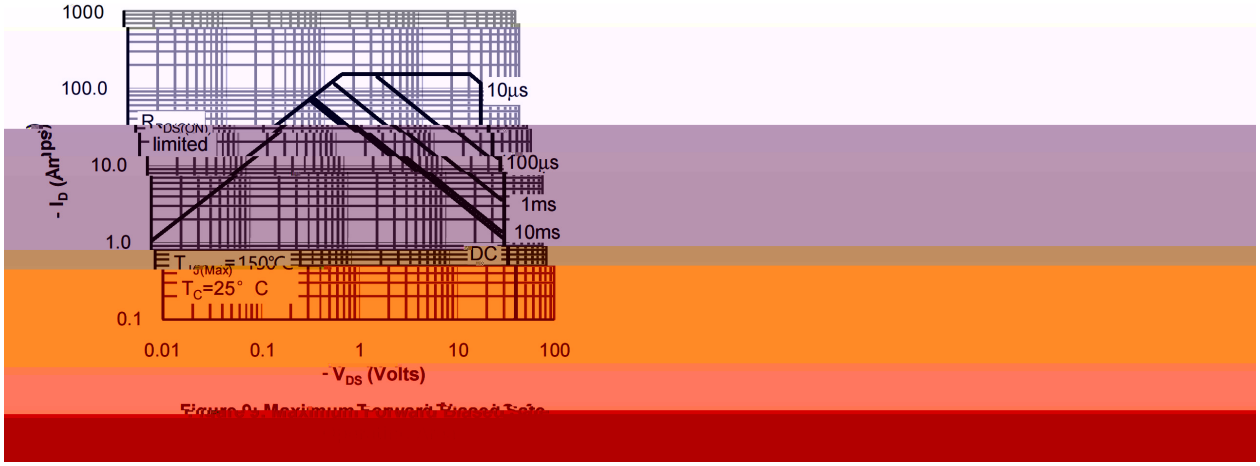


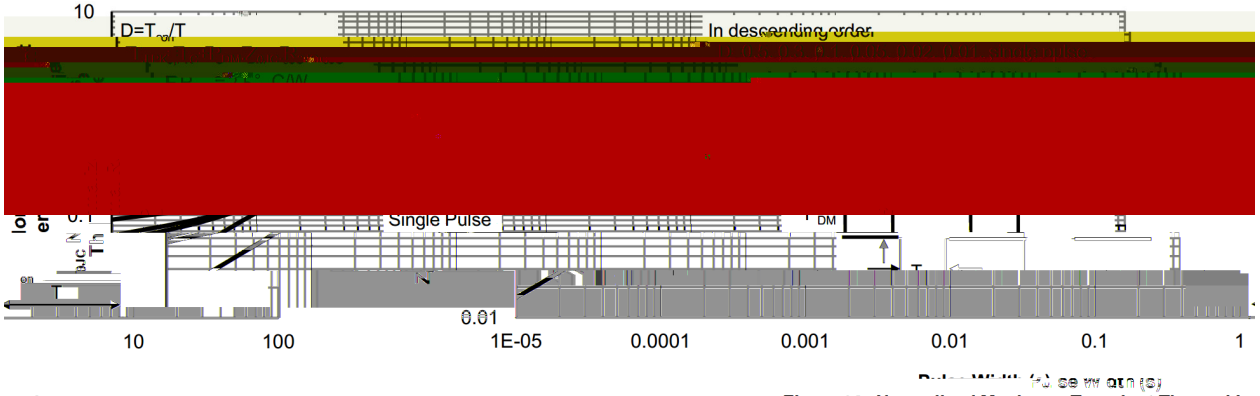


Characteristics
Figure 5: On-Resistance vs. Gate-Source Voltage
Figure 6: Body-Diode C

/ Electrical Characteristic Curve



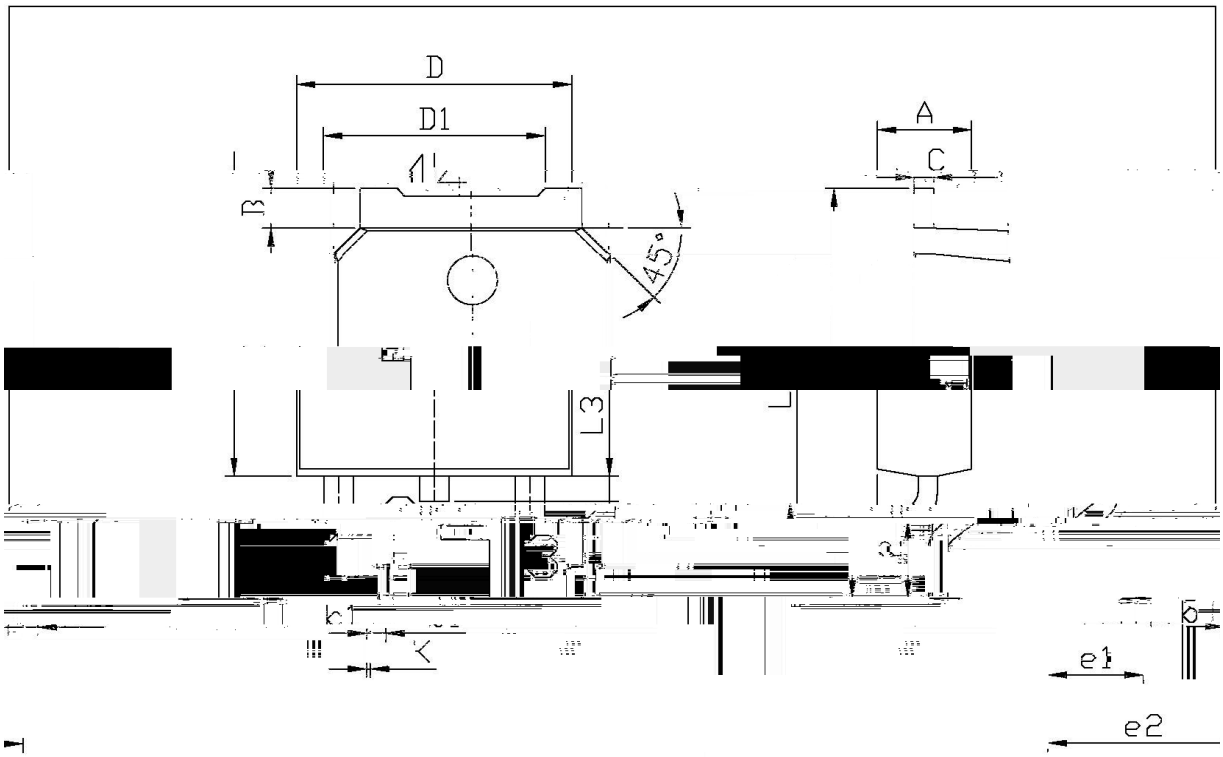




pedance

Figure 10: Normalized Maximum Transient Thermal Im

/ Package Dimensions

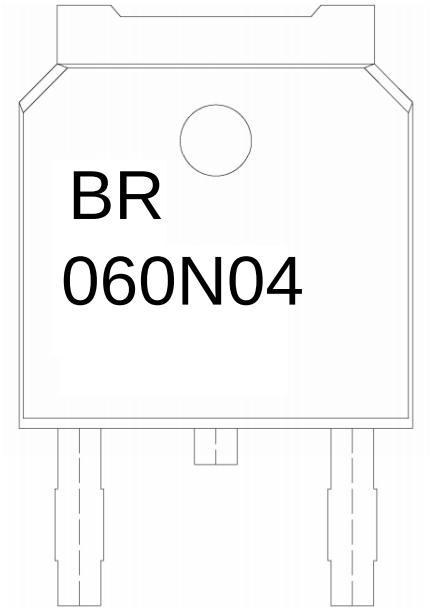


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
E	5.95	6.25	A	2.20	2.40
e1	2.24	2.34	B	0.95	1.25
e2	4.48	4.72	b	0.70	0.90
b1	0.55	L1	9.85	10.35	b1	0.45
C	0.45	0.55	L2	1.70	2.00	0.45
6.75	L3	0.60	0.90	D	6.45
5.30	K	0.00	0.10	J1	5.10

TO-252

/ Marking Instructions



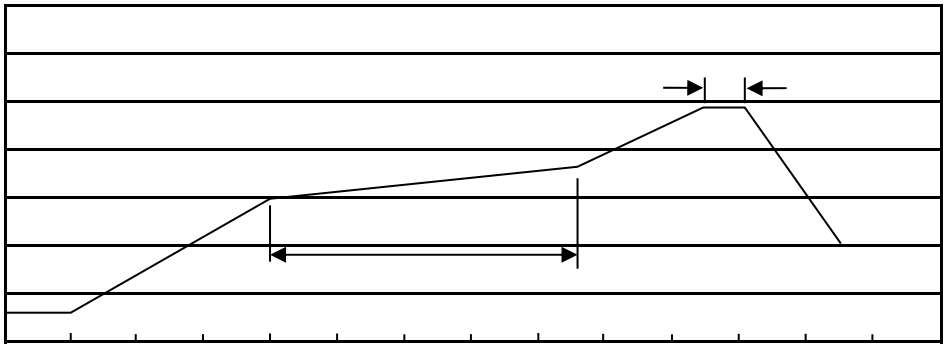
BR

060N04

Note:

BR:	Company Code
060N04:	Product Type Code
****:	Lot No. Code, code change with Lot No

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



		Note:
1	150 180 60 90sec;	1.Preheating:150~180 , Time:60~90sec.
2	245 5 5 0.5sec;	2.Peak Temp.:245 5 , Duration:5 0.5sec.
3	2 10 /sec.	3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260 5 10 1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension		(unit mm³)
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension		(unit mm³)
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices