MSD20N06

N-Channel 60-V (D-S) MOSFET

Description

The MSD20N06 is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-252 package is universally preferred for all commercial-industrial applications

Features

- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits
- RoHS compliant package

Application

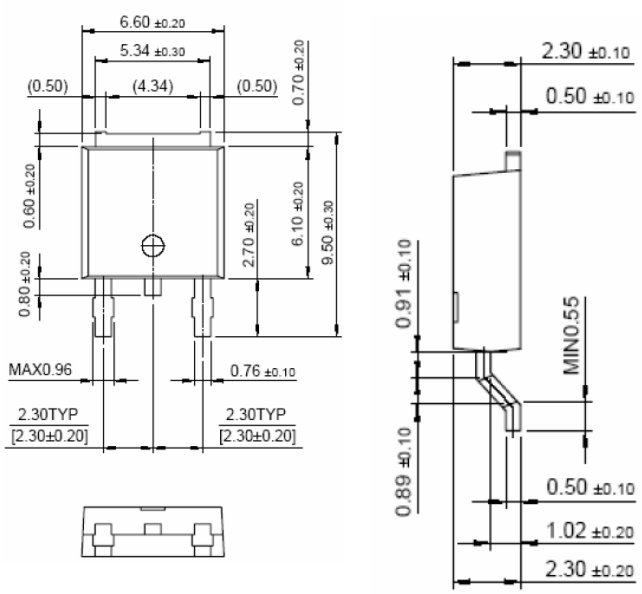
- Power Factor Correction
- LCD TV Power
- Full and Half Bridge Power

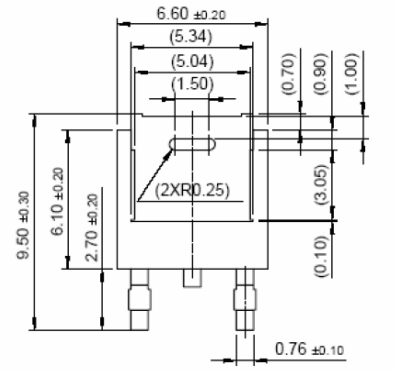
Package type：TO-252

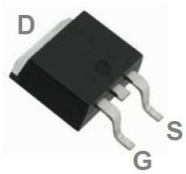
Packing & Order Information

Part No./ R：2,500/Reel

Part No./ T：80/Tube , 4,000/Box

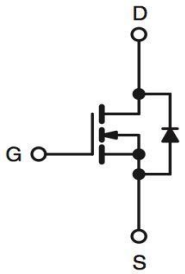






RoHS
COMPLIANT

Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current (TC=25°C)	19	A
I_{DM}	Pulsed Drain Current	75	A
I_S	Single Pulsed Avalanche Energy	42	mJ

MSD20N06

N-Channel 60-V (D-S) MOSFET

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)			
Symbol	Parameter	Value	Unit
PW	Power Dissipation (T_C=25°C)	50	W
T_J,T_{STG}	Operating Junction and Storage Temperature	-55 to + 150	°C

NOTE:

1. Repetitive rating; pulse width limited by maximum junction temperature.

Thermal Characteristics (Tc=25°C unless otherwise noted)				
Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	--	3	°C/W
$R_{\theta JA}$	Junction-to- Ambient	--	40	

On Characteristics						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
V_{GS}	Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 250μA	2.0	--	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V , I_D = 2.25 A	--	2.2	2.4	Ω

Static Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
V_{GS}	V_{DS} = V_{GS}, I_D = 250μA	1.0	--	--	V
I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V	--	--	±100	V
I_{DSS}	V_{DS} = 48 V , V_{GS} = 0 V V_{DS} = 48 V , V_{GS} = 0 V , T_j= 55°C	--	--	1.0 25.0	uA
ID(on)	V_{DS} = 5 V, V_{GS} = 10 V	30	--	--	A
$R_{DS(ON)}$	V_{GS} = 10 V , I_D = 15.2 A V_{GS} = 4.5 V , I_D = 14 A	--	--	94 109	mΩ
G_{FS}	V_{DS} = 15 V, I_D = 15.2 A	--	20	--	S
V_{SD}	I_S = 21 A , V_{GS} = 0 V	--	1.03	--	nA

Switching Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
Q_g	V_{DS} = 30 V,I_D = 15.2 A, V_{GS} = 4.5 V	--	5.1	--	nC
Q_{gs}		--	2.3	--	nC
Q_{gd}		--	20	--	
$t_{d(on)}$	V_{GEN} = 10 V , I_D = 15.2 A, R_L = 2 , V_{DD} = 30 V	--	4	--	ns
t_r		--	9	--	ns
$t_{d(off)}$		--	17	--	ns
tf		--	19	--	ns

MSD20N06

N-Channel 60-V (D-S) MOSFET

■Characteristics Curve

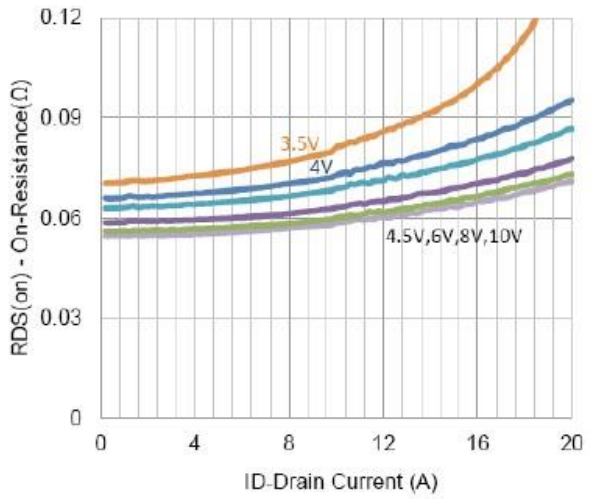


FIG.1-ON REGION VS DRAIN CURRENT

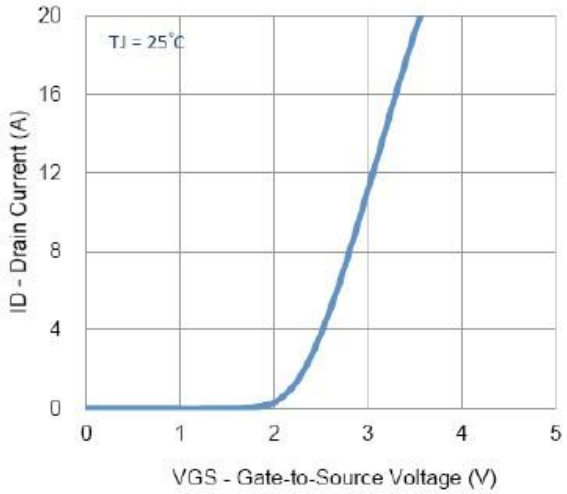


FIG.2-TRANSFER CHARACTERISTICS

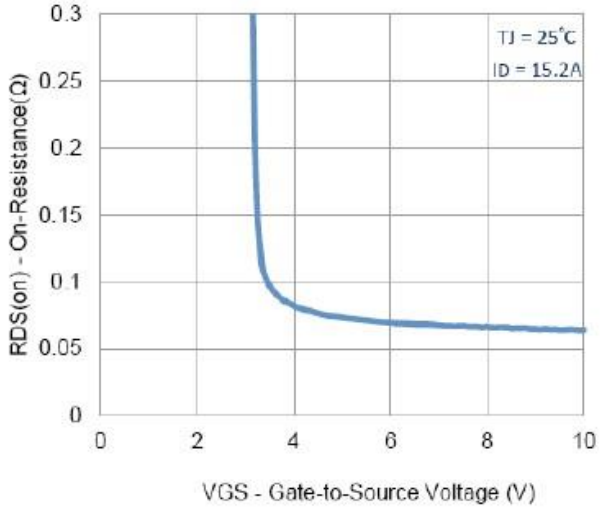


FIG.3-ON-RESISTANCE VS GATE-TO-SOURCE VOLTAGE

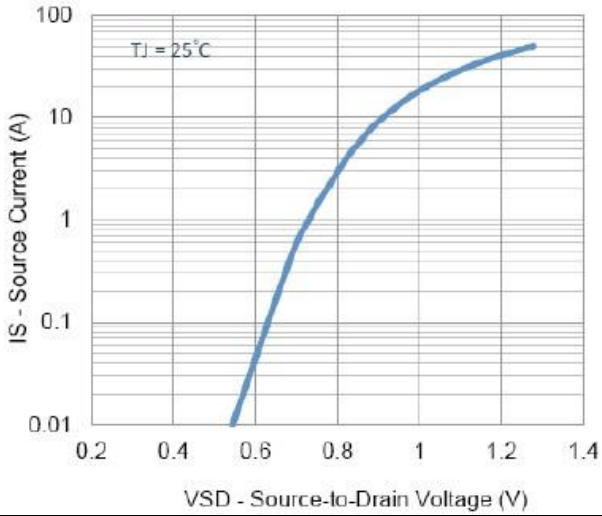


FIG.4-DRAIN-TO-SOURCE FORWARD VOLTAGE

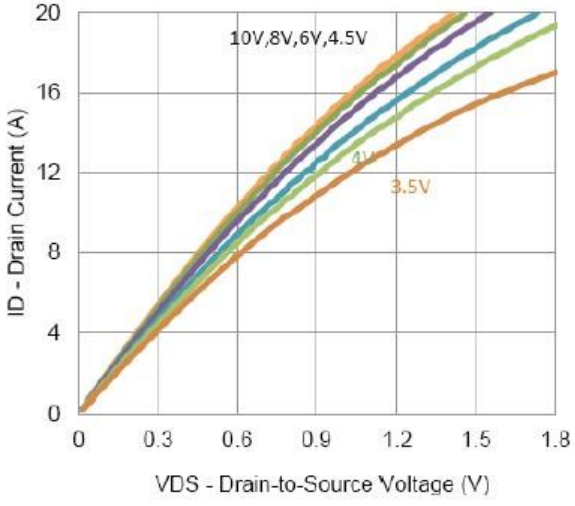


FIG.5-OUTPUT CHARACTERISTICS

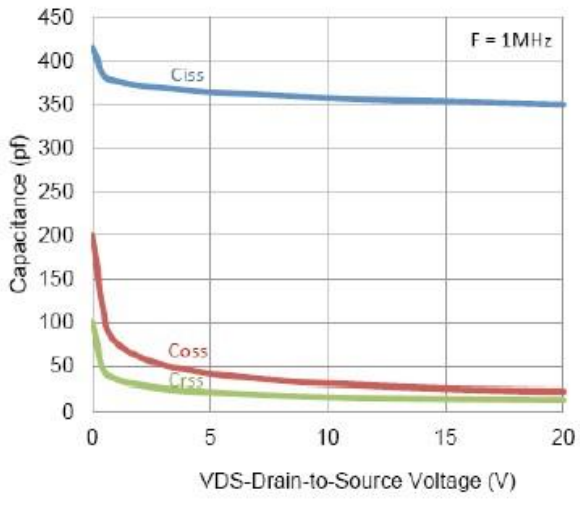


FIG.6-CAPACITANCE

MSD20N06

N-Channel 60-V (D-S) MOSFET

■Characteristics Curve

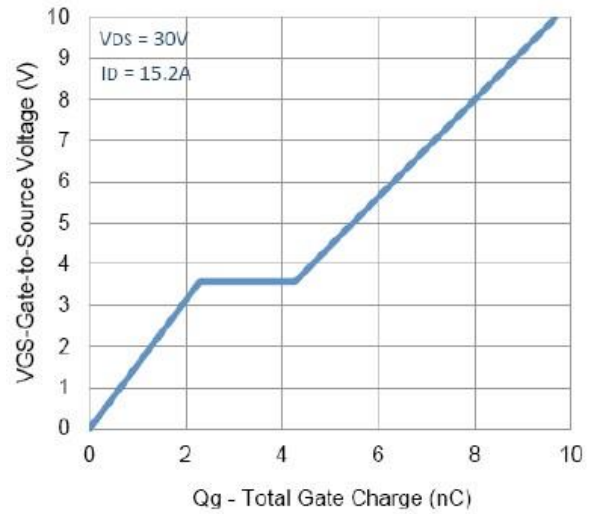


FIG.7-GATE CHARGE

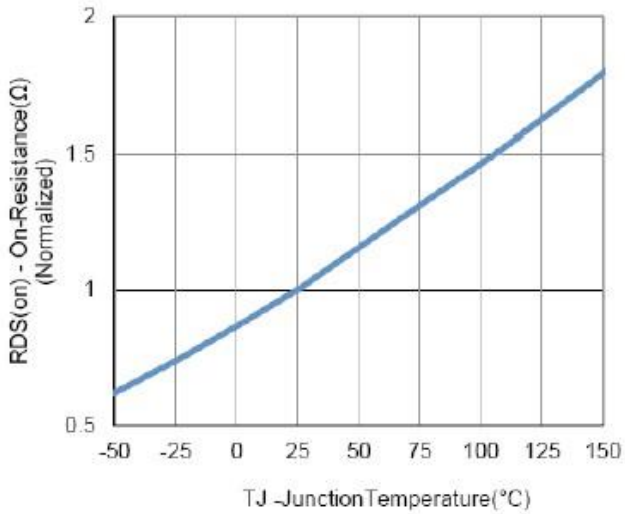


FIG.8-NORMALIZED ON-RESISTANCE VS JUNCTION TEMPERATURE

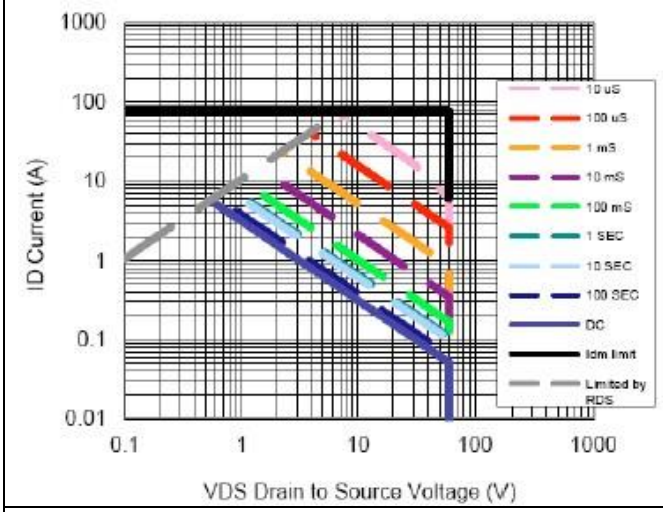


FIG.9-SAFE OPERATING AREA

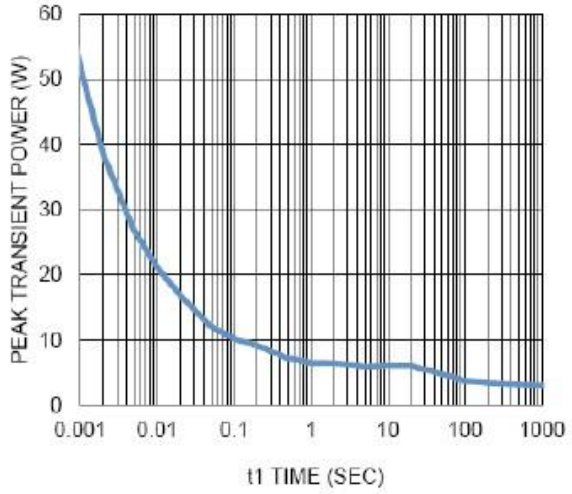


FIG.10-SINGLE PULSE MAXIMUM POWER DISSIPATION

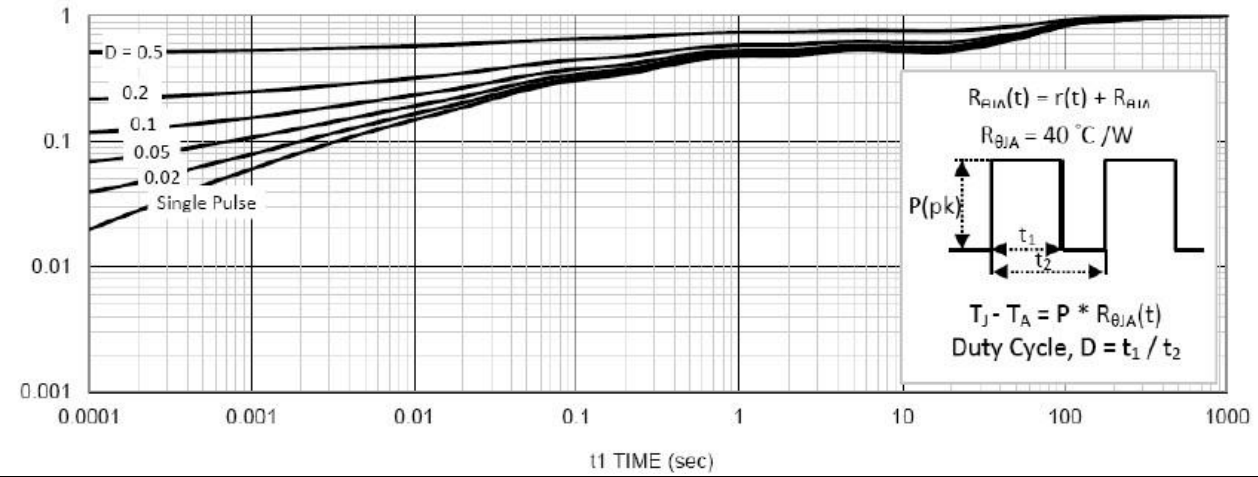


FIG.11-NORMALIZED THERMAL TRANSIENT JUNCTION TO AMBIENT

MSD20N06

N-Channel 60-V (D-S) MOSFET

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Bruckewell Technology Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Bruckewell”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Bruckewell makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Bruckewell disclaims

(i) Any and all liability arising out of the application or use of any product.

(ii) Any and all liability, including without limitation special, consequential or incidental damages.

(iii) Any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Bruckewell’s knowledge of typical requirements that are often placed on Bruckewell products in generic applications.

Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time.

Product specifications do not expand or otherwise modify Bruckewell’s terms and conditions of purchase, including but not limited to the warranty expressed therein.