SamHop Microelectronics Corp.

STB28N15

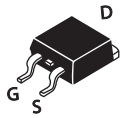
Ver 1.0

N-Channel Logic Level Enhancement Mode Field Effect Transistor

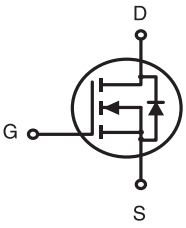
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
150V	32A	46 @ VGS=10V
		50 @ VGS=4.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- TO-263 package.



STB SERIES
TO-263(DD-PAK)



ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Symbol	Parameter		Limit	Units
V_{DS}	Drain-Source Voltage		150	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Drain Current-Continuous [c]	T_C=25°C	32	A
		T_C=100°C	22.6	A
I_{DM}	-Pulsed [a c]		94	A
E_{AS}	Single Pulse Avalanche Energy [d]		216	mJ
P_D	Maximum Power Dissipation	T_C=25°C	136	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 175	°C

THERMAL CHARACTERISTICS

$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.1	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	55	°C/W

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	150			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V , V_{GS}=0V			1	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}= ±20V , V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.2		2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V , I_D=20A		35	46	m ohm
		V_{GS}=4.5V , I_D=20A		37	50	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=20A		55		S
DYNAMIC CHARACTERISTICS [b]						
C_{ISS}	Input Capacitance	V_{DS}=25V,V_{GS}=0V f=1.0MHz		3760		pF
C_{OSS}	Output Capacitance			210		pF
C_{RSS}	Reverse Transfer Capacitance			163		pF
SWITCHING CHARACTERISTICS [b]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=50V I_D=10A V_{GS}=4.5V R_{GEN}= 3.3 ohm		20		ns
t_r	Rise Time			22		ns
$t_{D(OFF)}$	Turn-Off Delay Time			68		ns
t_f	Fall Time			16		ns
Q_g	Total Gate Charge	V_{DS}=75V,I_D=10A,V_{GS}=4.5V		41		nC
Q_{gs}	Gate-Source Charge	V_{DS}=75V,I_D=10A, V_{GS}=4.5V		11		nC
Q_{gd}	Gate-Drain Charge			22		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1.2	V

Notes

a.Pulse Test:Pulse Width ≤ 10us, Duty Cycle ≤ 1%.
b.Guaranteed by design, not subject to production testing.
c.Drain current limited by maximum junction temperature.
d.Starting T_J=25°C,L=0.3mH,V_{DD} = 25V.
e.Mounted on FR4 Board of 1 $inch^2$, 2oz.

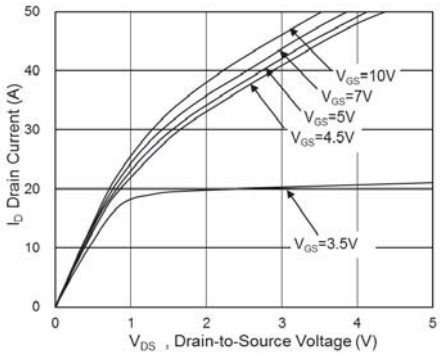


Fig.1 Typical Output Characteristics

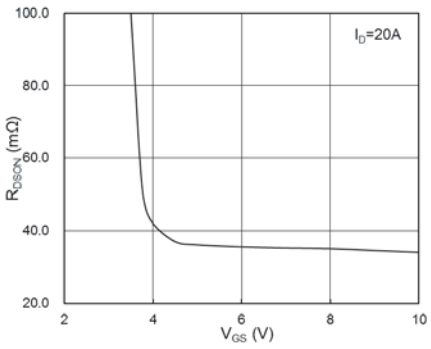


Fig.2 On-Resistance vs. Gate-Source

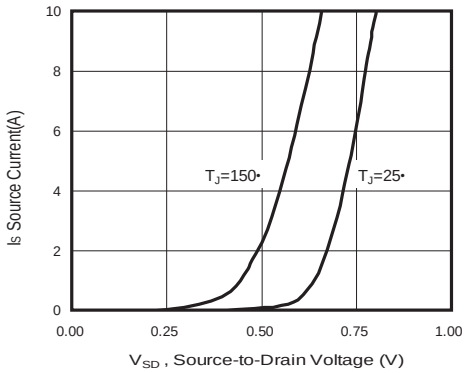


Fig.3 Forward Characteristics Of Reverse

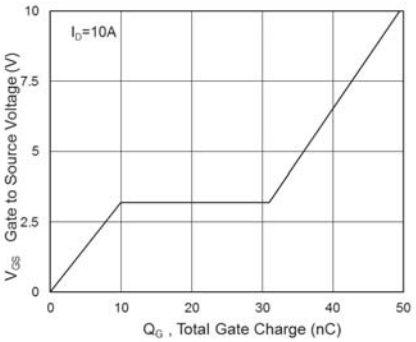


Fig.4 Gate-Charge Characteristics

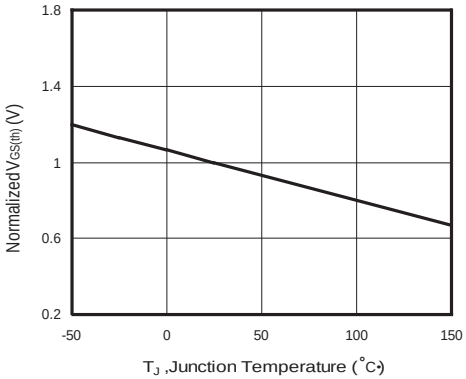


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

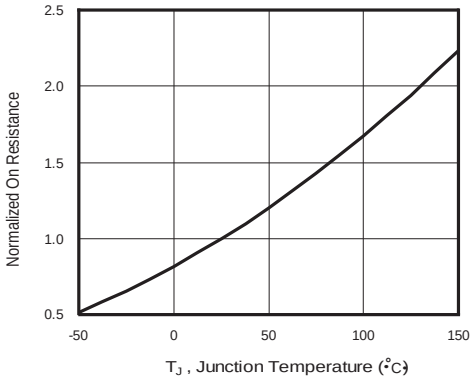


Fig.6 Normalized R_{DSON} vs. T_J

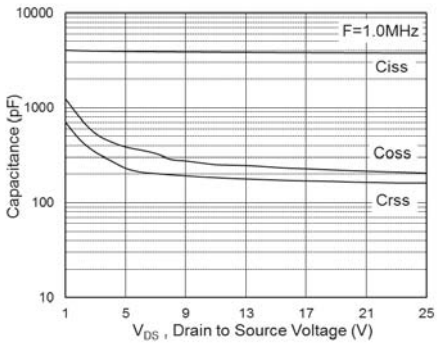


Fig.7 Capacitance

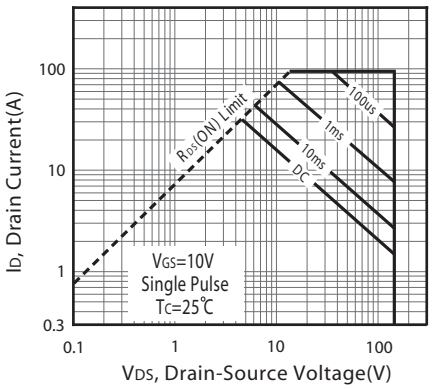


Fig.8 Safe Operating Area

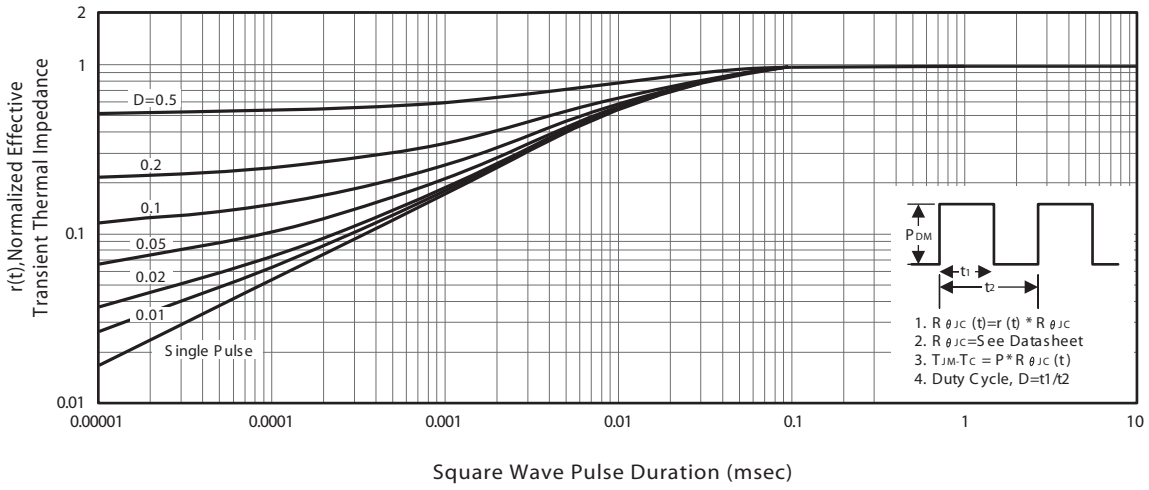
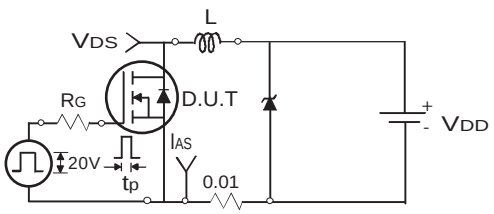
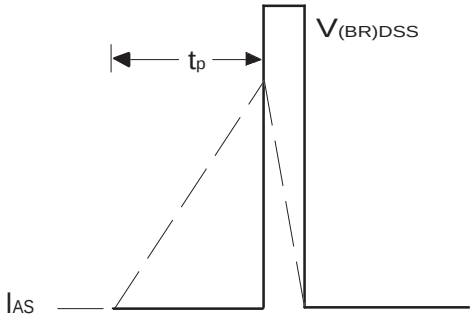


Figure 9. Normalized Thermal Transient Impedance Curve



Uncamped Inductive Test Circuit

Fig.10a

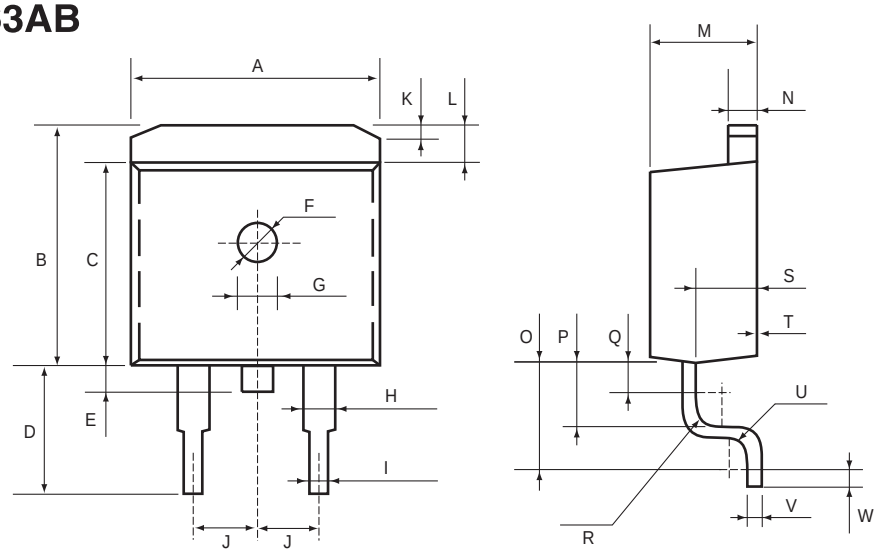


Unclamped Inductive Waveforms

Fig.10b

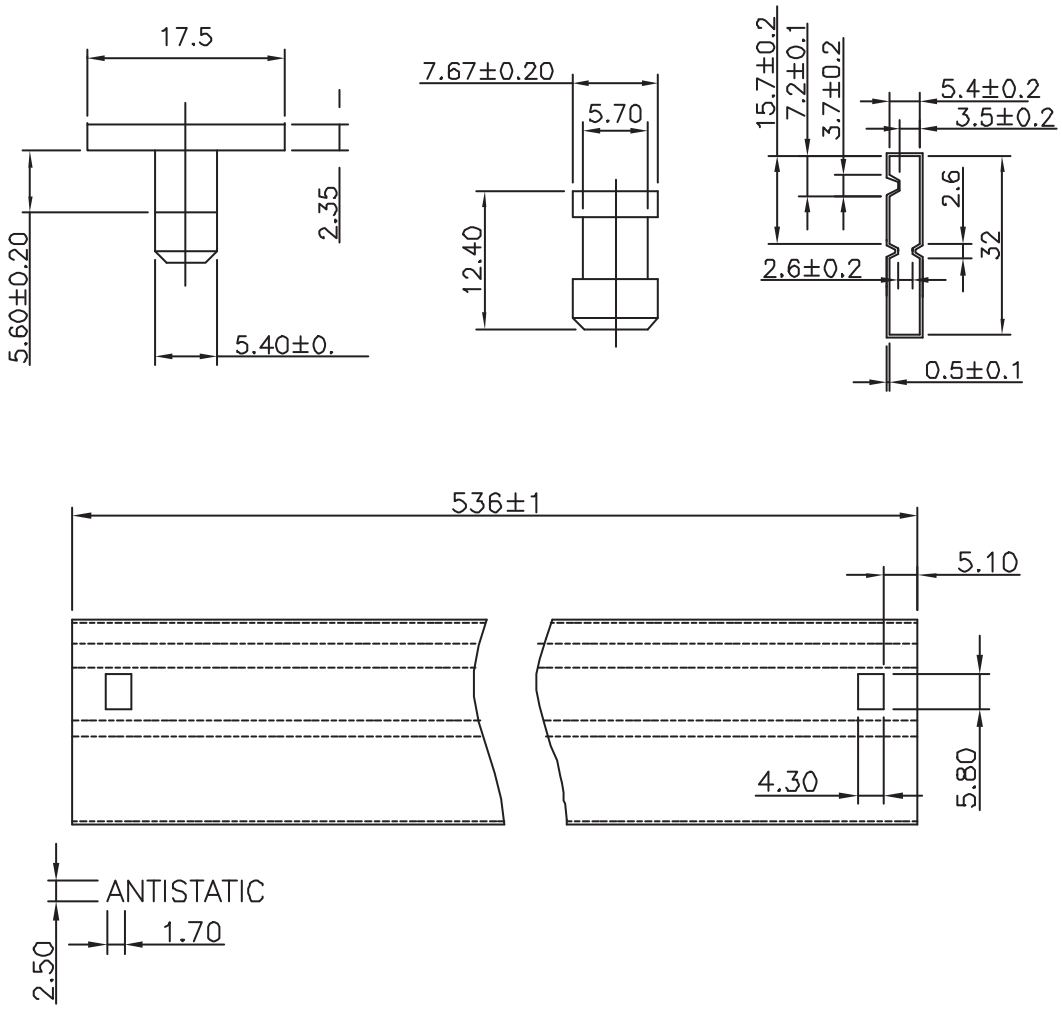
PACKAGE OUTLINE DIMENSIONS

TO-263AB



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.9	10.5	0.390	0.413
B	9.5	10.3	0.374	0.406
C	8.3	8.9	0.327	0.350
D	4.7	5.5	0.185	0.217
E	1.5		0.059	
F	ϕ1.6		ϕ0.063	
G	1.0	1.4	0.039	0.055
H	1.07	1.47	0.042	0.058
I	0.76	1.06	0.030	0.042
J	2.04	3.04	0.080	0.120
K	0.2	0.6	0.0079	0.024
L	1.4		0.055	
M	4.24	4.64	0.167	0.183
N	1.15	1.45	0.045	0.057
O	3.25	3.75	0.128	0.148
P	2.3		0.091	
Q	1.6		0.063	
R	R0.4	R1.0	R0.0158	R0.0394
S	2.7 MAX		0.106 MAX	
T	0.0	0.3	0.0000	0.0118
U	R0.4	R1.0	R0.0158	R0.0394
V	0.3	0.5	0.0118	0.0197
W	1.2 min		0.047 min	

TO263AB Tube



TOP MARKING DEFINITION

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