

General Description

The SM3113N is the highest performance trench N-ch MOSFETs with extreme high cell density ,which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications .

Features

- Low On-Resistance
- Improved dv/dt Capability
- 100% EAS Guaranteed
- RoHS Compliant

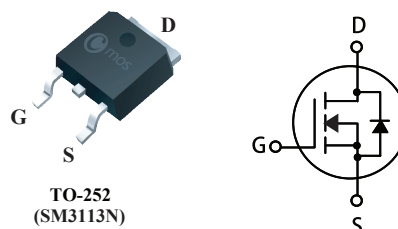
Product Summary

BVDSS	RDS(on)	ID
30V	4mΩ	85A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

TO-252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	85	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	53	A
I_{DM}	Pulsed Drain Current	340	A
EAS	Single Pulse Avalanche Energy ¹	200	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	50	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State)	---	50	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady State)	---	2.5	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=30A$	---	---	4	$m\Omega$
		$V_{GS}=4.5V$, $I_D=15A$	---	---	6	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=24V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=24V$, $V_{GS}=0V$, $T_J=85^{\circ}\text{C}$	---	---	30	
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=15A$	---	31	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.4	---	Ω
Q_g	Total Gate Charge	$V_{DS}=15V$, $V_{GS}=10V$, $I_D=30A$	---	40	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$, $V_{GEN}=10V$, $R_G=6\Omega$ $I_{DS}=1A$, $R_L=15\Omega$	---	20	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	20	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2500	---	pF
C_{oss}	Output Capacitance		---	350	---	
C_{rss}	Reverse Transfer Capacitance		---	250	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current		---	---	85	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_{SD}=20A$	---	---	1.1	V

Note :

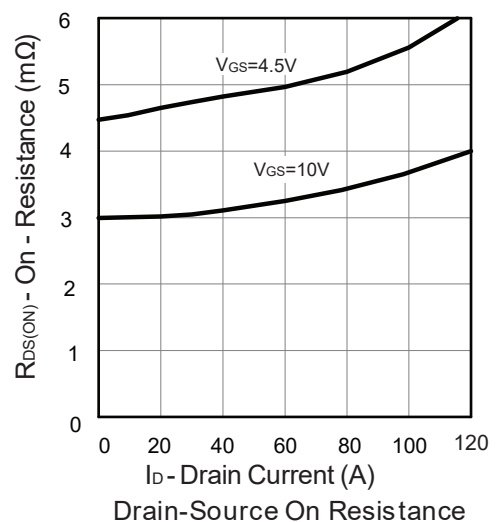
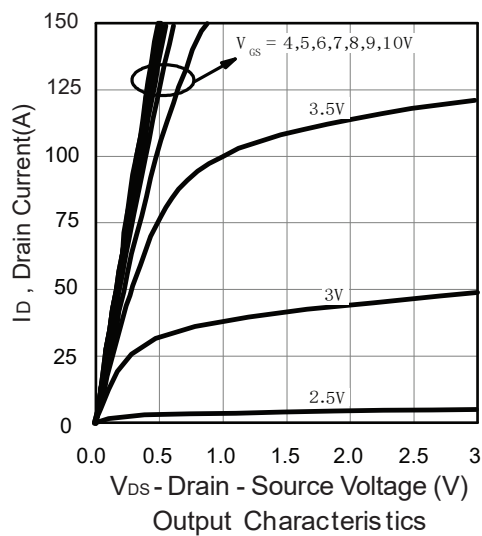
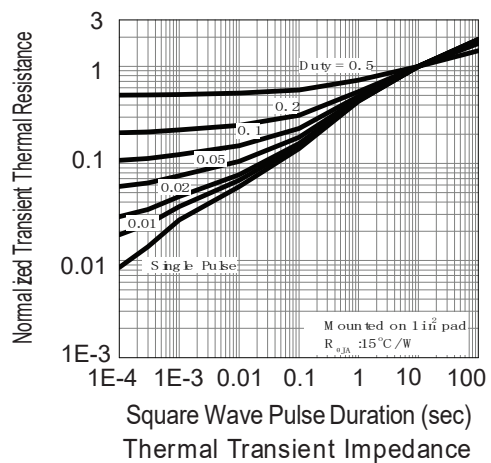
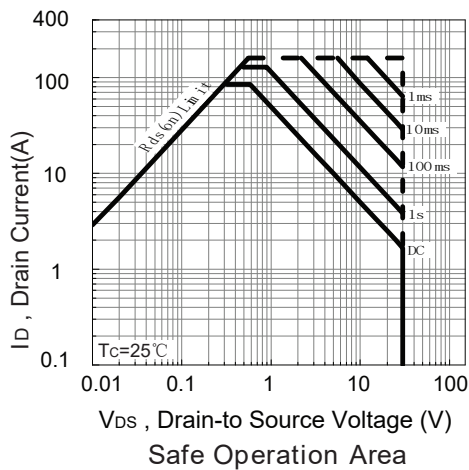
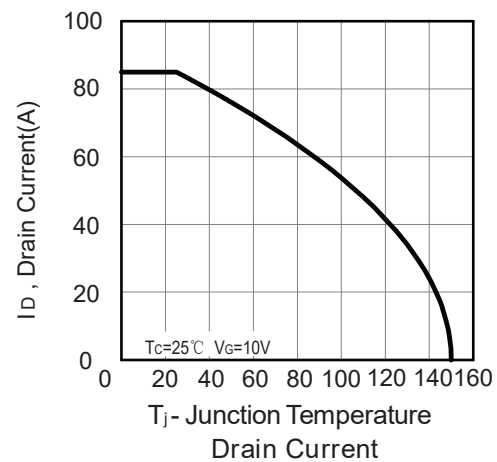
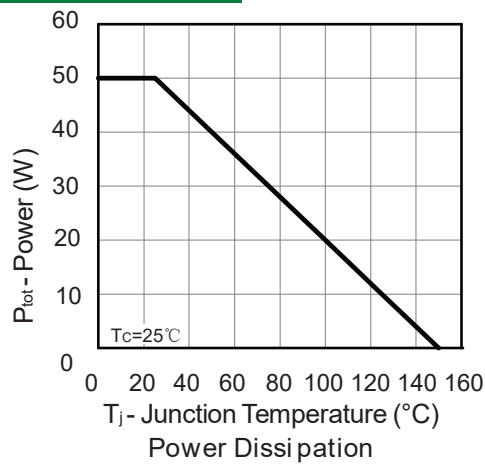
1.The EAS data shows Max. rating . The test condition is $V_{DD}=28V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=28.3A$.

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Cmos reserves the right to improve product design ,functions and reliability without notice.

Typical Characteristics



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