

**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**

- Advanced high cell density Trench technology
- Improved dv/dt Capability
- 100% EAS Guaranteed
- RoHS Compliant

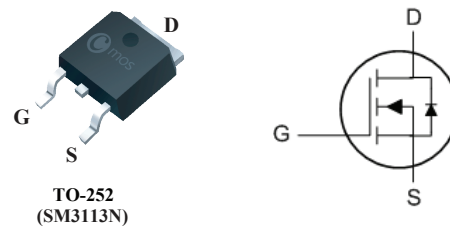
**Product Summary**

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
$I_D@T_C=25^{\circ}C$	Continuous Drain Current <sup>1</sup>	85	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current <sup>1</sup>	53	A
$I_{DM}$	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy (L=0.5mH) <sup>1</sup>	225	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	50	W
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	150	°C

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State)	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady State)	---	2.5	°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 <sup>2</sup>	$V_{GS}=10V, I_D=30A$	---	---	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	$\mu A$
		$V_{DS}=24V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	30	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=15A$	---	50	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	1.4	---	$\Omega$
$Q_g$	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	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	2500	---	pF
$C_{oss}$	Output Capacitance		---	600	---	
$C_{rss}$	Reverse Transfer Capacitance		---	200	---	

**Diode Characteristics**

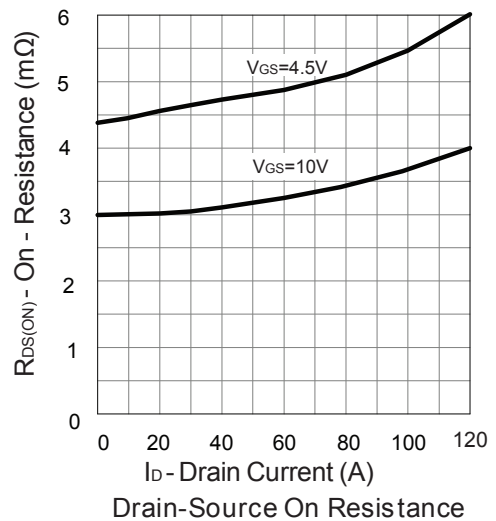
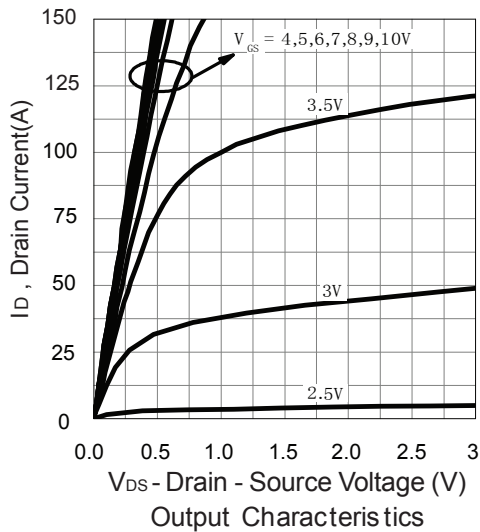
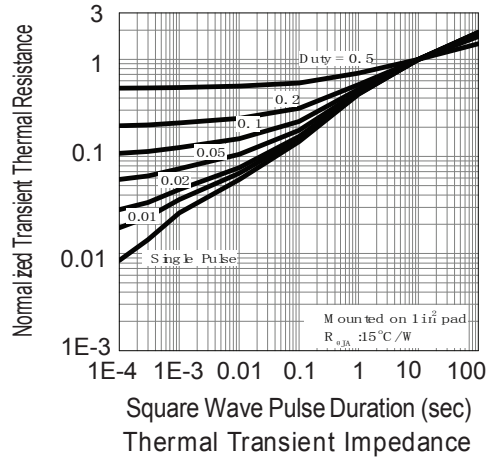
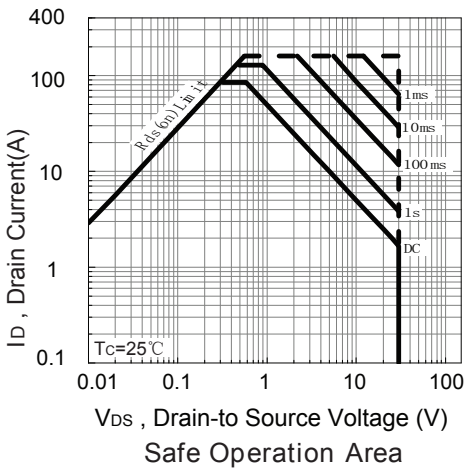
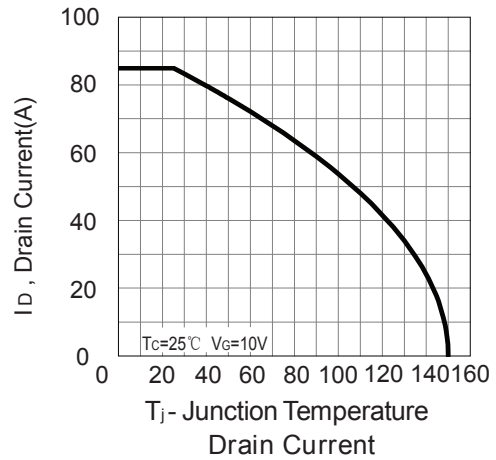
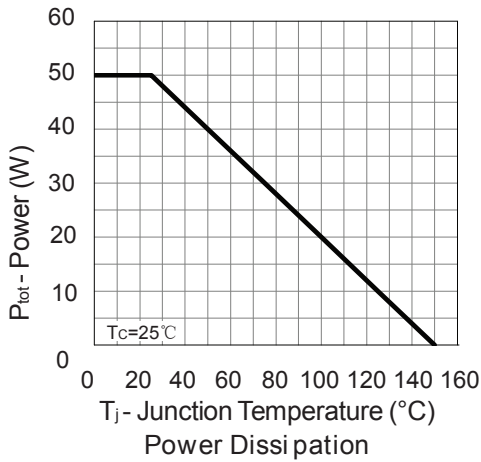
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current		---	---	85	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_{SD}=20A$	---	---	1.1	V

Note :

- 1.UIS tested and pulse width limited by maximum junction temperature  $150^\circ\text{C}$  (initial temperature  $T_J=25^\circ\text{C}$ ).
- 2.The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$

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

Typical Characteristics



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