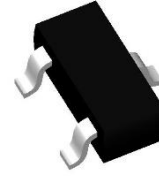


FEATURES

- Drain-Source Withstand Voltage: 60V
- Max. $R_{DS(on)}$: 7.5Ω @ $V_{GS}=10V$
 8.0Ω @ $V_{GS}=4.5V$
- HBM Class 2 ⁽⁶⁾
- Automotive applications
- AEC-Q101 Qualified
- Excellent ON resistance
- Small package SOT-23
- Supper high density cell design
- MSL1

PRODUCT APPEARANCE

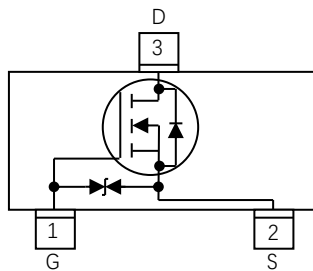
SOT-23

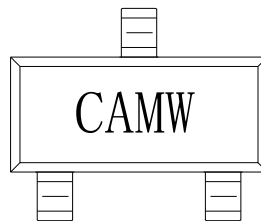
DESCRIPTION

The SNM067500EAQ is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product SNM067500EAQ is in compliance with RoHS.

Applications:

- Automotive systems
- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device

PIN CONFIGURATION

MARKING


CA = Device Code

M = Month

W = Week

LIMITING VALUES

Parameter	Symbol	Condition	Value	Unit
Drain-Source Voltage	V_{DS}		60	V
Gate-Source Voltage	V_{GS}		± 20	V
Continuous Drain Current	I_D	$T_A=25^{\circ}\text{C}$	212	mA
		$T_A=100^{\circ}\text{C}$	139	mA
Pulsed Source Current ⁽²⁾	I_{DM}		1123	mA
Power Dissipation ⁽¹⁾	P_D	$T_A=25^{\circ}\text{C}$	445	mW
		$T_A=100^{\circ}\text{C}$	178	mW
Operating Junction Temperature	T_J		-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}		-55 to 150	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ⁽²⁾	Steady State	$R_{\theta JA}$	225	281	°C/W
Junction-to-Ambient Thermal Resistance ⁽¹⁾	Steady State	$R_{\theta JA}$	160	200	°C/W

ELECTRONICS CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{ V}$, $I_D = 250\mu\text{A}$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$			1	μA
		$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$, $T_J=125^\circ\text{C}^{(5)}$			250	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS}=0\text{ V}$, $V_{GS}= \pm 20\text{V}$			± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}$, $I_D= 250\mu\text{A}$	1.0	1.5	2.0	V
Drain-to-source On-resistance ⁽⁴⁾	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 200\text{mA}$		4.0	7.5	Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 50\text{mA}$		4.0	8.0	Ω
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$, $V_{DS}=25\text{ V}$		16.7		pF
Output Capacitance	C_{OSS}			7.8		
Reverse Transfer Capacitance	C_{RSS}			3.4		
Total Gate Charge ⁽⁵⁾	$Q_{G(TOT)}$	$V_{GS}=10\text{V}$, $V_{DS}= 30\text{V}$, $I_D = 200\text{mA}$		0.46		nC
Gate-to-Source Charge ⁽⁵⁾	Q_{GS}			0.18		
Gate-to-Drain Charge ⁽⁵⁾	Q_{GD}			0.11		
Gate Resistance	R_g	$f=1\text{MHz}$		18.6		Ω

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
SWITCHING CHARACTERISTICS (5)						
Turn-On Delay Time	td(ON)	V _{GS} =10V, V _{DS} = 32V, I _D =200mA, R _G =5Ω		7.4		ns
Rise Time	tr			21.1		
Turn-Off Delay Time	td(OFF)			10.3		
Fall Time	tf			86		
BODY DIODE CHARACTERISTICS						
Forward Voltage ⁽⁴⁾	V _{SD}	V _{GS} =0 V, I _S =115mA		0.8	1.2	V

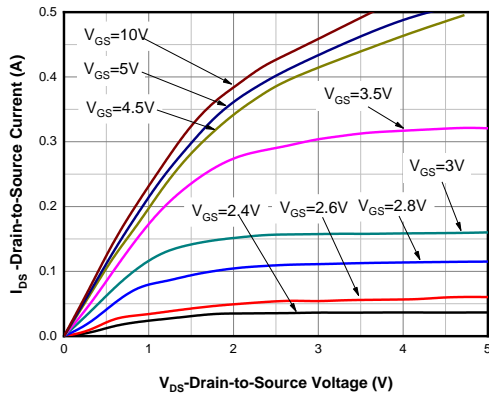
(T_J=25°C, unless otherwise noted.)

Note:

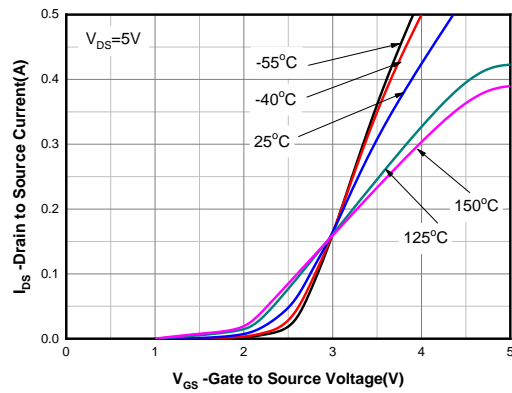
- (1) FR-4 board (38mm×38mm×t1.6mm, 70μm Copper) partially covered with copper (645mm² area). The power dissipation PDSM is based on Junction-to-Ambient thermal resistance value and the T_{J(MAX)}=150°C. The value is only for reference, any application depends on the user's specific board design.
- (2) FR-4 board (38mm×38mm×t1.6mm, 70μm Copper) minimum pad covered with copper.
- (3) Repetitive rating, pulsed, duty cycle ~1%, keep initial T_J =25°C, the maximum allowed junction temperature of 150°C.
- (4) The static characteristics are obtained using ~380μs pulses, duty cycle ~1%.
- (5) The parameter is not subject to production test – verified by design / characterization.
- (6) ESD test standards follow ANSI/ESDA/JEDEC JS-001-2017.

TYPICAL CHARACTERISTICS

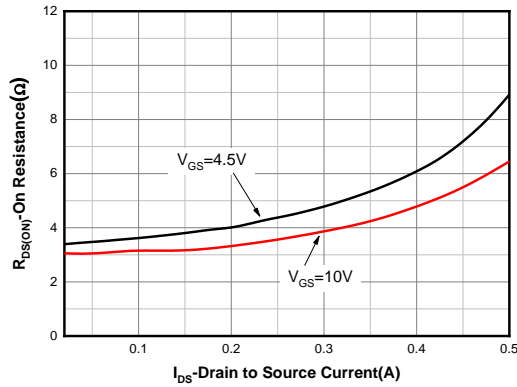
Ta=25°C, unless otherwise noted.



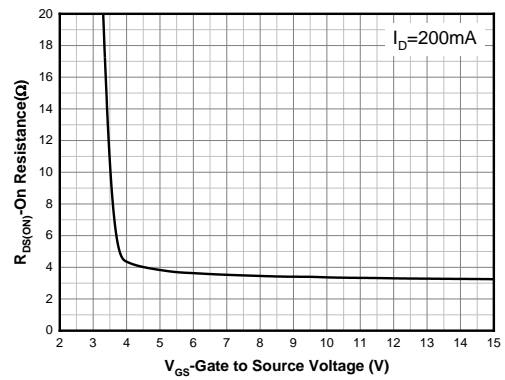
Output Characteristics ⁽³⁾



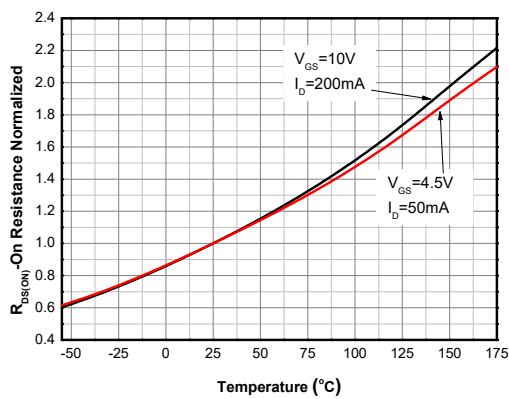
Transfer Characteristics ⁽³⁾



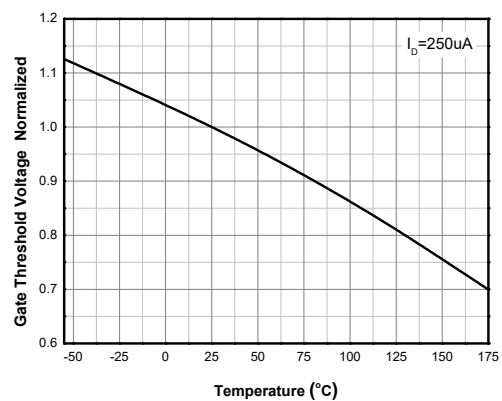
On-Resistance vs. Drain Current ⁽³⁾



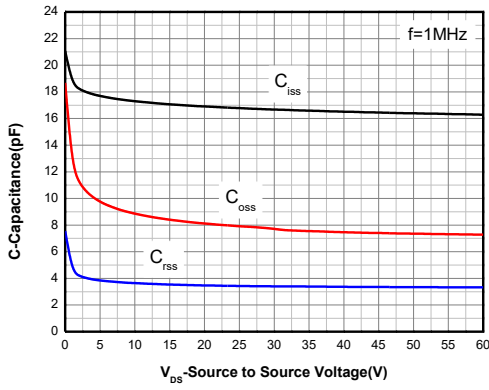
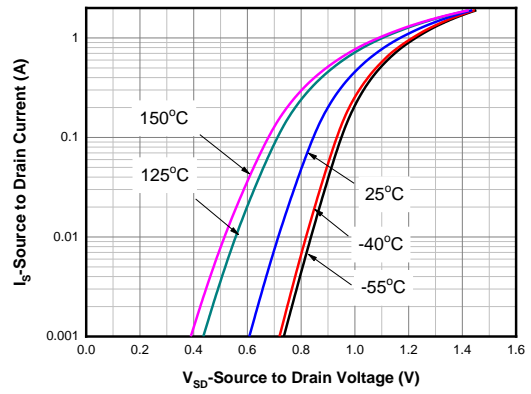
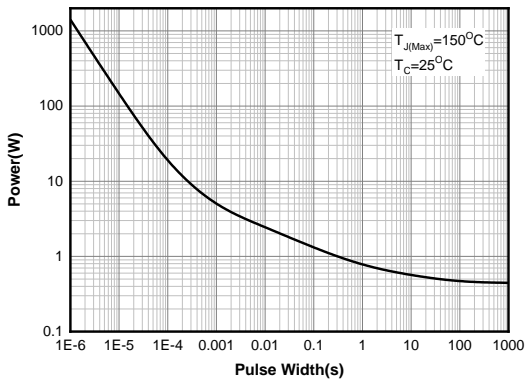
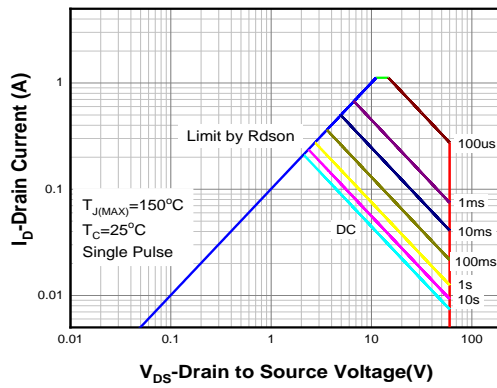
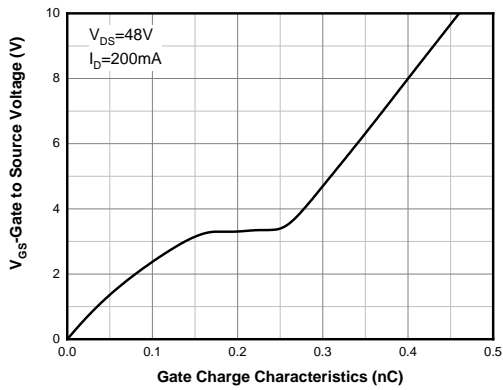
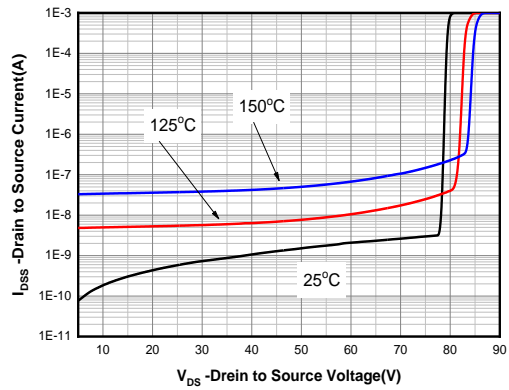
On-Resistance vs. Gate-to-Source Voltage ⁽³⁾

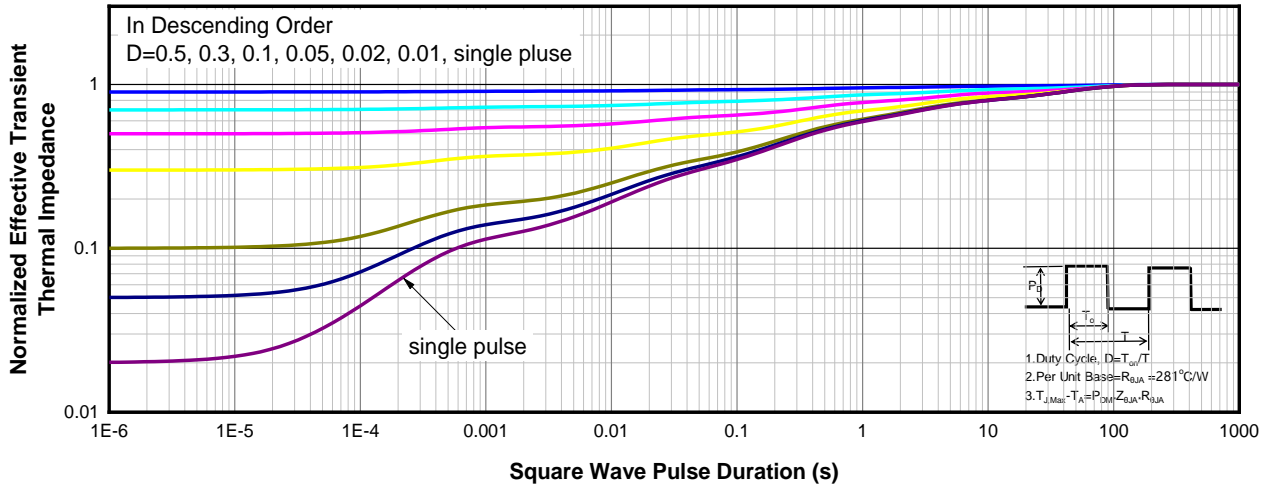


On-Resistance vs. Junction Temperature ⁽³⁾



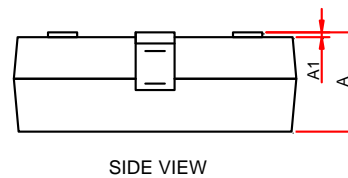
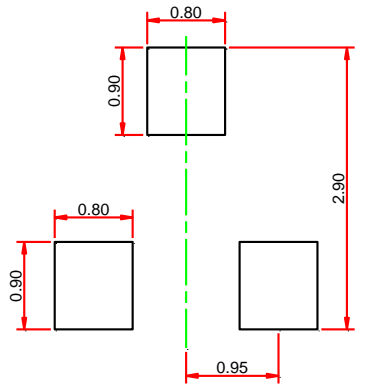
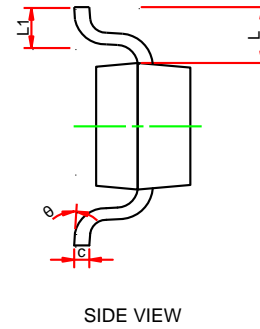
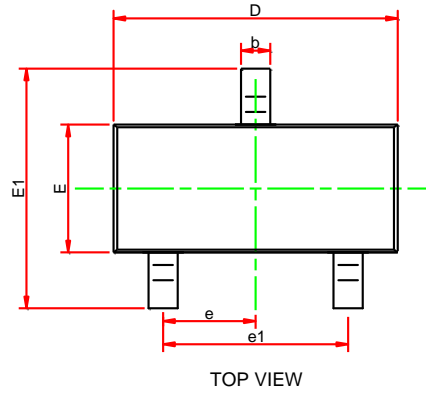
Threshold Voltage vs. Temperature

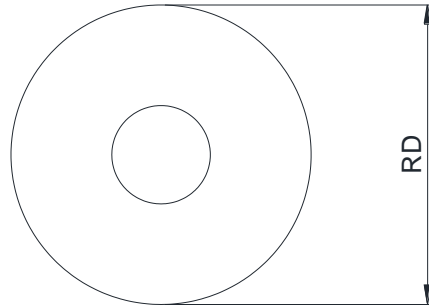
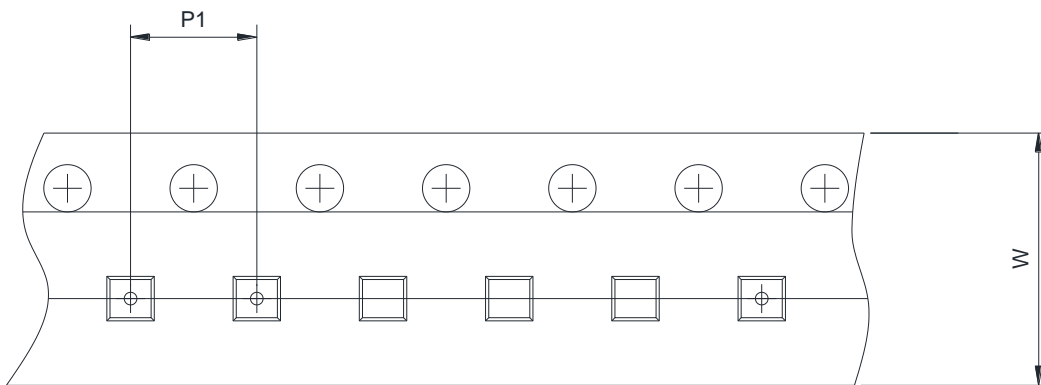
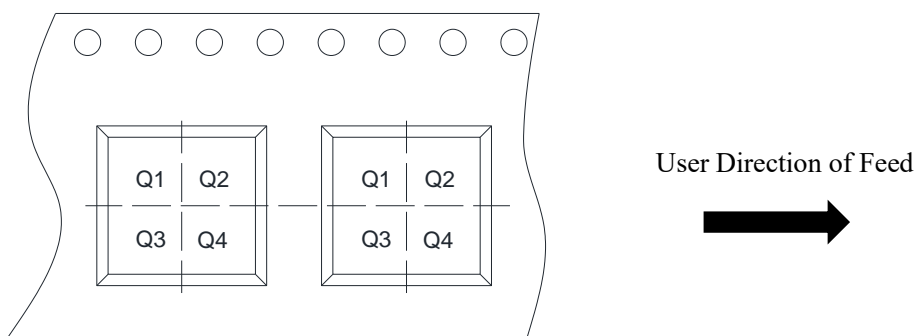

Capacitance

Body Diode Forward Voltage (3)

Single Pulse power

Safe Operating Area

Gate Charge Characteristics

Drain Current vs. Drain Voltage


Transient Thermal Response (Junction-to-Ambient)

SOT-23 DIMENSIONS
PACKAGE SIZE

Symbol	Min.	Typ.	Max.
A	0.91	-	1.12
A1	0.01	-	0.10
b	0.30	0.40	0.50
c	0.09	-	0.15
D	2.80	2.90	3.00
E1	2.25	2.40	2.55
E	1.20	1.30	1.40
e	0.95 BSC		
e1	1.80	1.90	2.00
L	0.55 Ref		
L1	0.30	0.40	0.50
θ	0°	-	8°



TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch <input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm <input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1 <input type="checkbox"/> Q2 <input checked="" type="checkbox"/> Q3 <input type="checkbox"/> Q4

ORDERING INFORMATION

TYPE NUMBER	PACKAGE	PACKING
SNM067500EAQ-3/TR	SOT-23	Tape and reel

SOT-23 is packed with 3000 pieces/disc in braided packaging.

Important statement

SIT reserves the right to change the above-mentioned information without prior notice.

REVISION HISTORY

Version number	Datasheet status	Revision date
V1.0	Initial version.	April 2024
V1.1	Updated the unit of Max. $R_{DS(on)}$.	August 2024