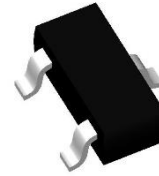


FEATURES

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

PRODUCT APPEARANCE

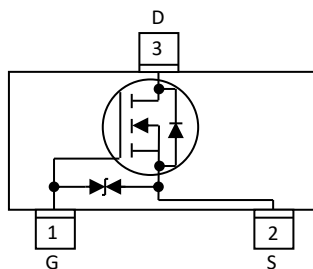
SOT-23

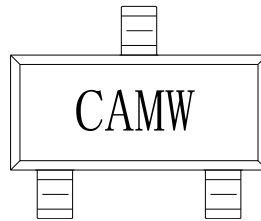
DESCRIPTION

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 _{θJA}	225	281	°C/W
Junction-to-Ambient Thermal Resistance ⁽¹⁾	Steady State	R _{θJA}	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 V, I _D = 250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} = 0V, T _J =25°C			1	μA
		V _{DS} =60V, V _{GS} = 0V, T _J =125°C ⁽⁵⁾			250	μA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0 V, V _{GS} = ±20V			±10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D = 250μA	1.0	1.5	2.0	V
Drain-to-source On-resistance ⁽⁴⁾	R _{DS(on)}	V _{GS} =10V, I _D =200mA		4.0	7.5	
		V _{GS} =4.5V, I _D =50mA		4.0	8.0	Ω
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0V, f = 1.0MHz, V _{DS} =25 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} =10V, V _{DS} = 30V, I _D =200mA		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=1MHz		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

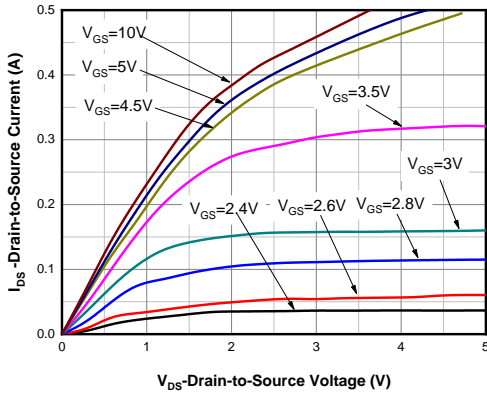
(T_J=25°C, unless otherwise noted.)

Note:

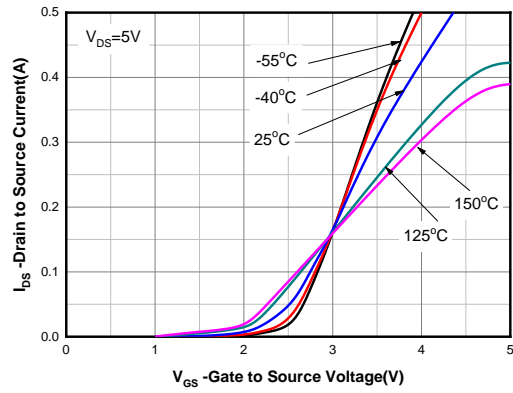
- (1) FR-4 board (38mm×38mm×t1.6mm, 70μm Copper) partially covered with copper (645mm² area). The power dissipation PDSM is based on Junction-to-Ambient thermal resistance value and the T_{J(MAX)}=150°C. The value is only for reference, any application depends on the user's specific board design.
- (2) 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

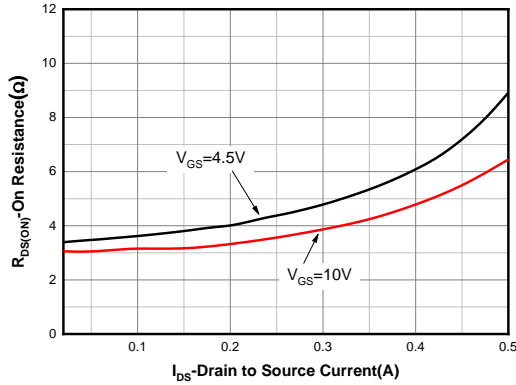
Ta=25°C, unless otherwise noted.



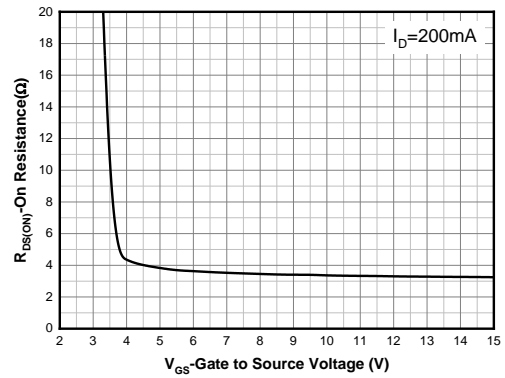
Output Characteristics (3)



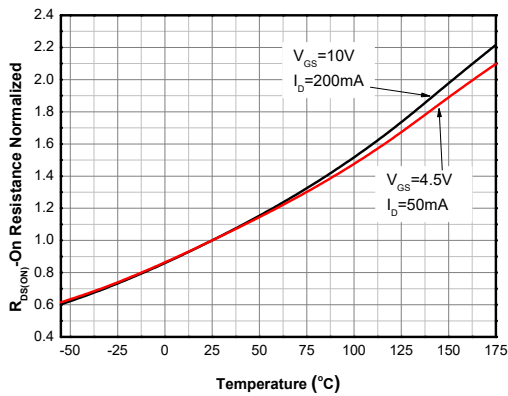
Transfer Characteristics (3)



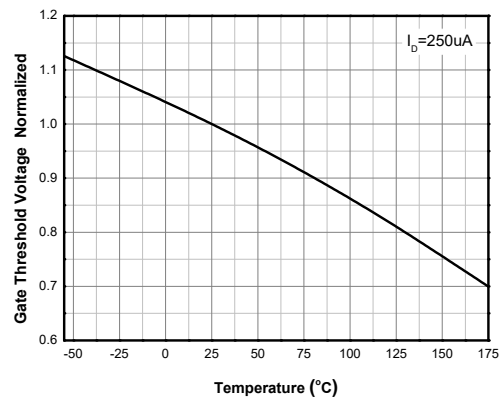
On-Resistance vs. Drain Current (3)



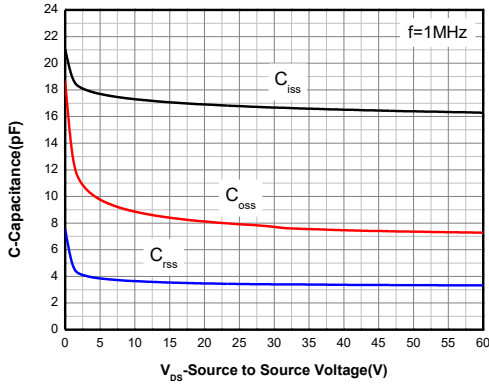
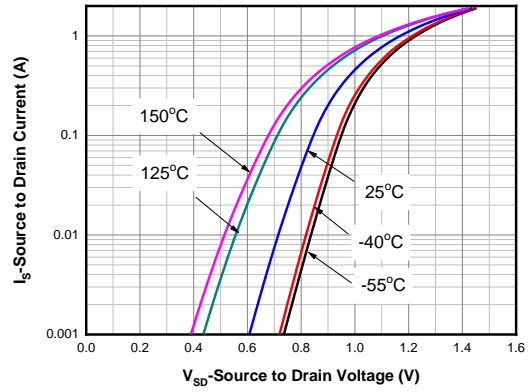
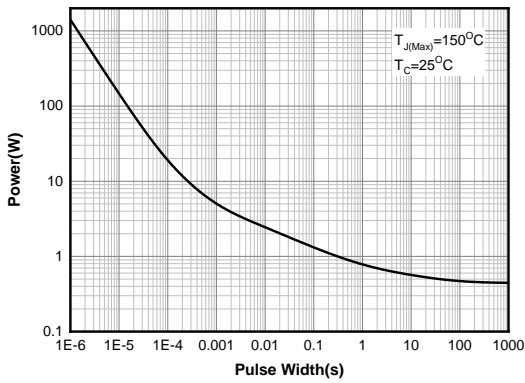
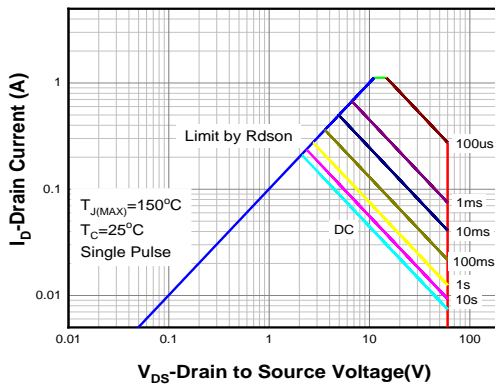
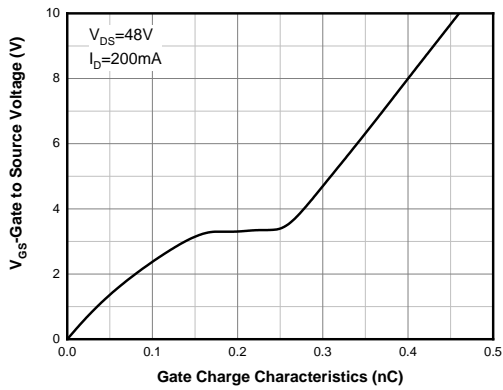
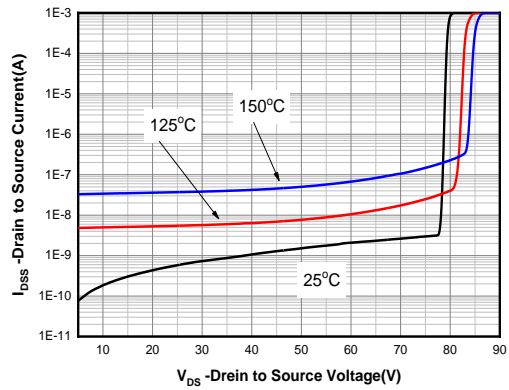
On-Resistance vs. Gate-to-Source Voltage (3)

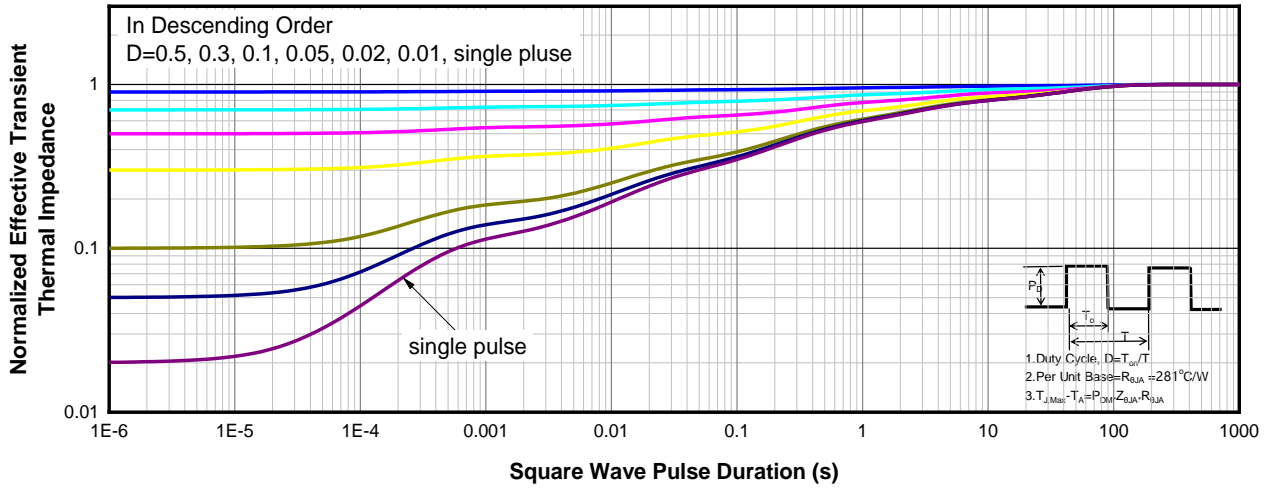


On-Resistance vs. Junction Temperature (3)



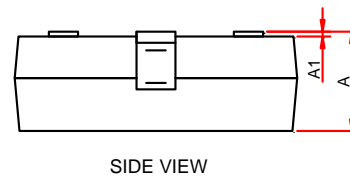
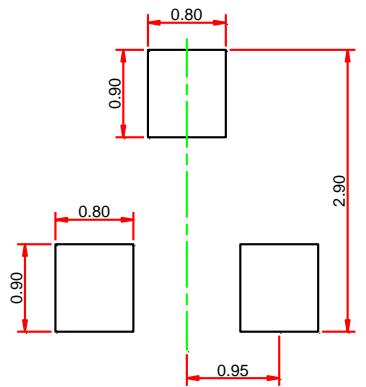
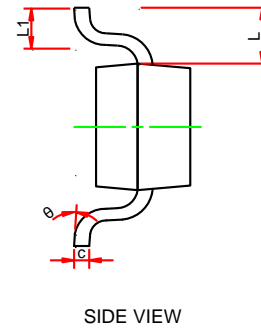
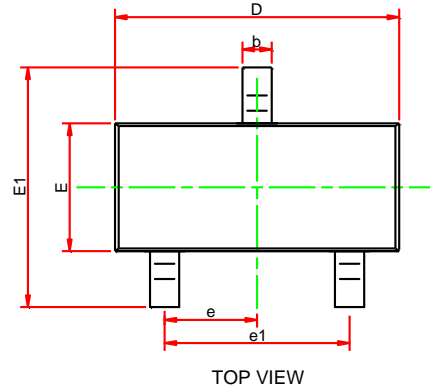
Threshold Voltage vs. Temperature

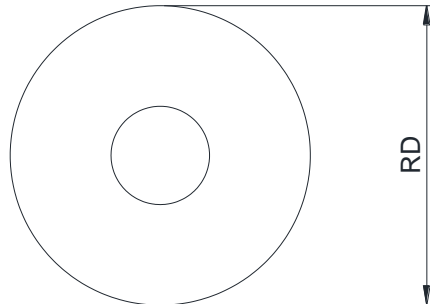
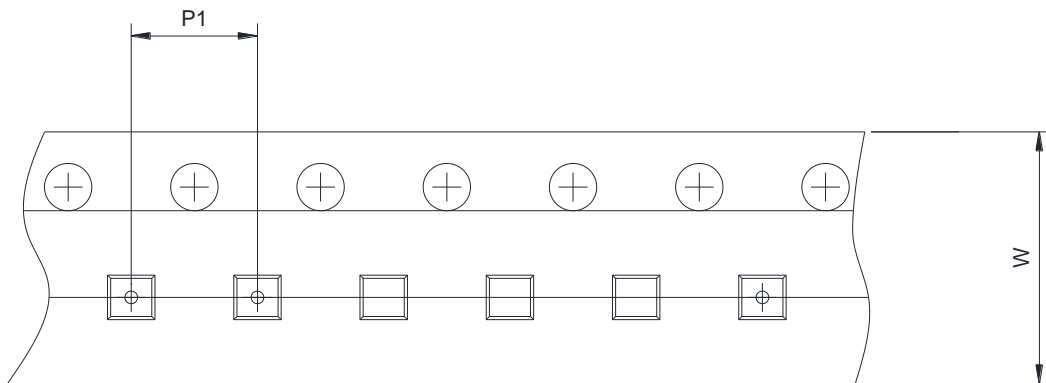
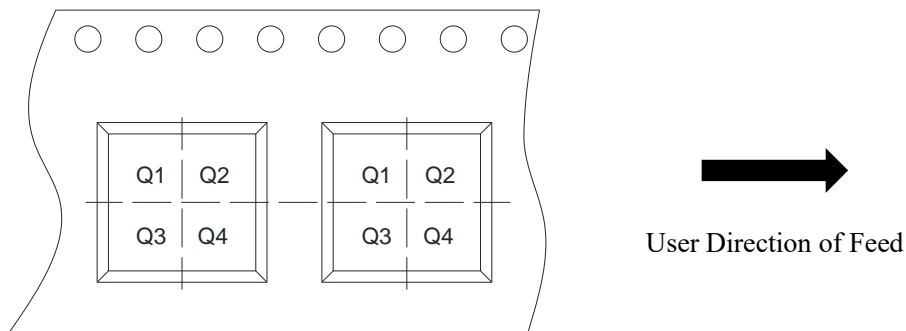

Capacitance

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