

N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (mA)
60	3 at $V_{GS} = 10$ V	340
	4 at $V_{GS} = 4.5$ V	
	4.5 at $V_{GS} = 3$ V	

FEATURES

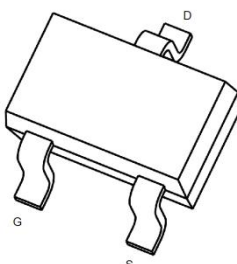
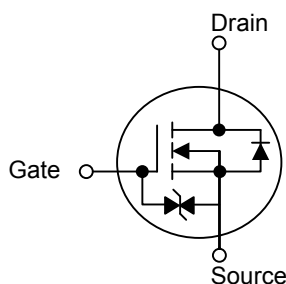
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding
- ESD protected Gate HBM 2KV


RoHS*
 COMPLIANT

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System

Package:


SOT-323


ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^b	$T_A = 25^\circ\text{C}$	I_D	mA
	$T_A = 100^\circ\text{C}$	340	
Pulsed Drain Current ^a	I_{DM}	800	
Power Dissipation ^b	$T_A = 25^\circ\text{C}$	P_D	W
	$T_A = 100^\circ\text{C}$	0.2	
Maximum Junction-to-Ambient ^b	R_{thJA}	625	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^\circ\text{C}$

Notes:

a. Pulse width limited by maximum junction temperature.

b. Surface Mounted on FR4 board.

* Pb containing terminations are not RoHS compliant, exemptions may apply.

SPECIFICATIONS $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ. ^a	Max.	
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}$, $I_D = 10\text{ }\mu\text{A}$	60			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	1		2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{ V}$, $V_{GS} = 0\text{ V}$			1	
On-State Drain Current ^a	$I_{D(on)}$	$V_{GS} = 10\text{ V}$, $V_{DS} = 7.5\text{ V}$	800			mA
		$V_{GS} = 4.5\text{ V}$, $V_{DS} = 10\text{ V}$	500			
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 500\text{ mA}$		1.3	3	Ω
		$V_{GS} = 4.5\text{ V}$, $I_D = 200\text{ mA}$		1.8	4	
		$V_{GS} = 3\text{ V}$, $I_D = 10\text{ mA}$			4.5	
Diode Forward Voltage	V_{SD}	$I_S = 200\text{ mA}$, $V_{GS} = 0\text{ V}$		0.8	1.3	V
Dynamic ^a						
Total Gate Charge	Qg	$V_{DS}=15\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$		1.5		nC
Gate-Source Charge	Qgs			1.9		
Gate-Drain Charge	Qgd			0.4		
Input Capacitance	Ciss	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		28		pF
Output Capacitance	Coss			9		
Reverse Transfer Capacitance	Crss			2		
Switching ^{a, b, c}						
Turn-On Delay Time	td(on)	$V_{DD}=30\text{V}$, $R_L = 150\Omega$ $I_D=200\text{mA}$, $V_{GEN}=10\text{V}$, $R_G=10\Omega$		8.5		ns
Turn-On Rise Time	tr			6		
Turn-Off Delay Time	td(off)			31.8		
Turn-Off Fall Time	tf			15.5		

Notes:

a. For DESIGN AID ONLY, not subject to production testing.

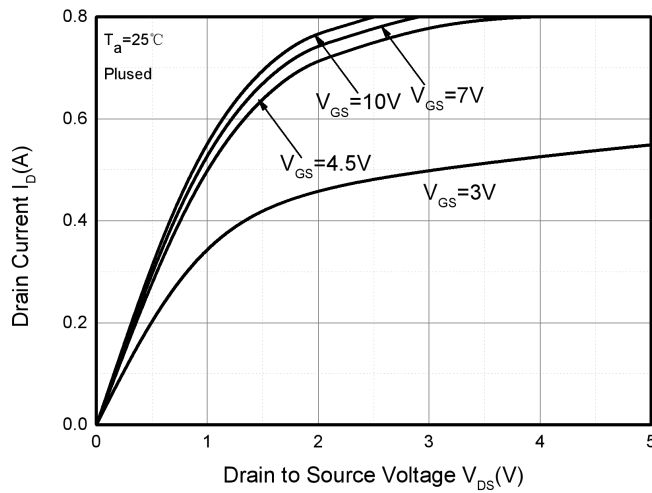
b. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.

c. Switching time is essentially independent of operating temperature.

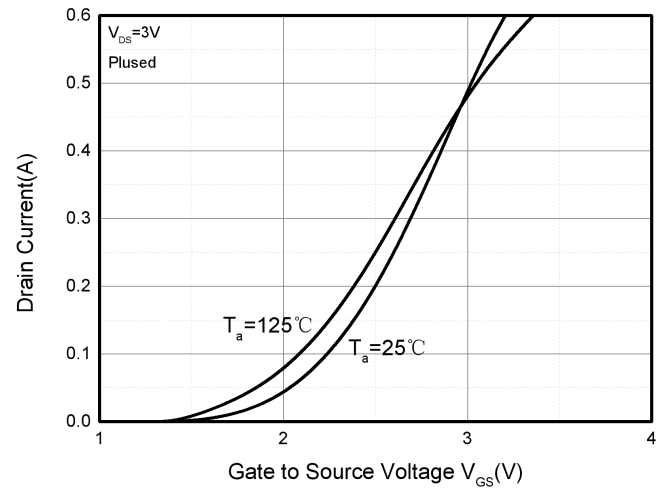
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

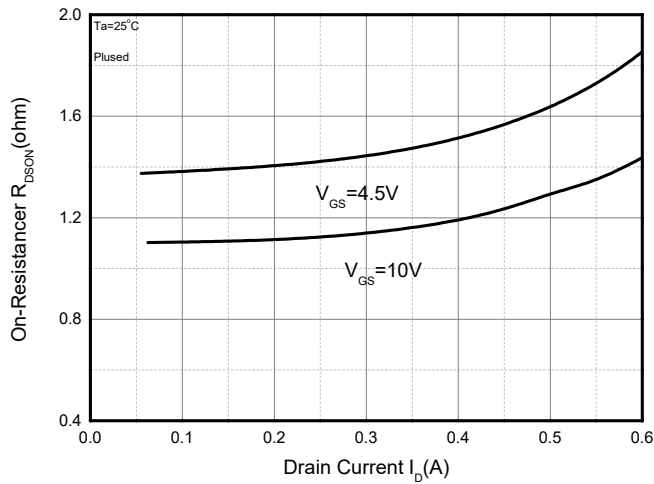
Output Characteristics



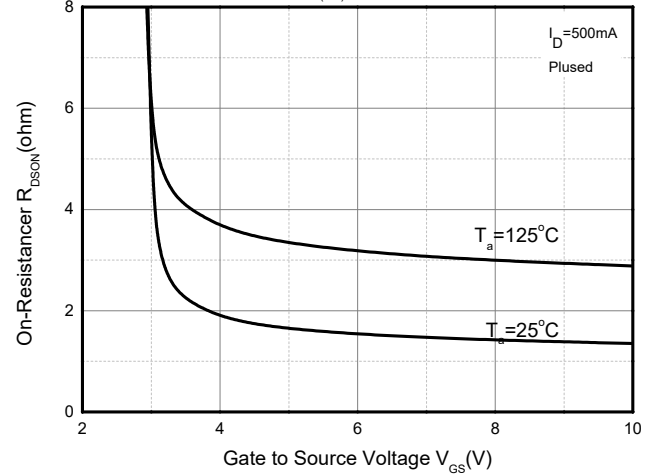
Transfer Characteristics



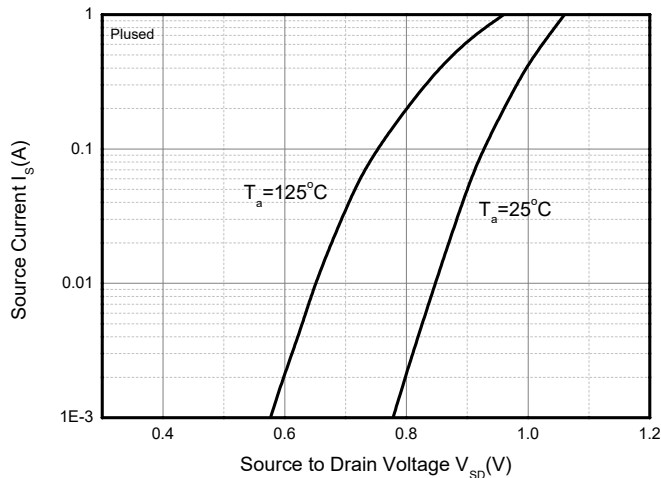
$R_{DS(ON)} - I_D$



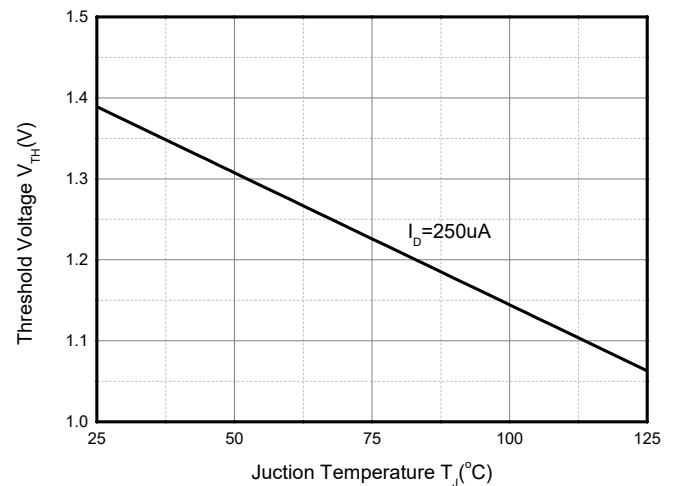
$R_{DS(ON)} - V_{GS}$



$I_S - V_{SD}$



Threshold Voltage



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