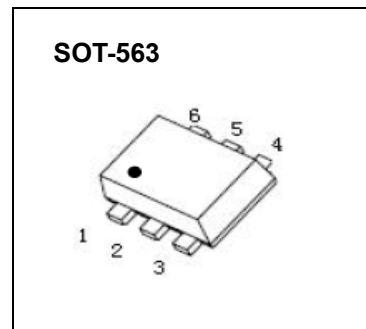


Plastic-Encapsulate MOSFETs

N Channel + P Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	5Ω@10V	0.34A
	5.3Ω@4.5V	
-50V	8Ω@-10V	-0.18A
	10Ω@-5V	



DESCRIPTION

This N Channel + P Channel MOSFET has been designed using advanced power trench process to optimize the $R_{DS(ON)}$.

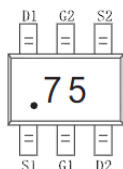
FEATURE

- High-Side Switching
- Low Threshold
- Fast Switching Speed

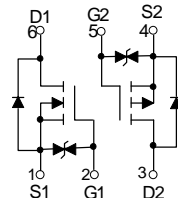
APPLICATION

- Drivers:Relays, Solenoids, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

MARKING: 75



Equivalent Circuit



MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
N-Channel MOSFET			
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current -Continuous	0.34	A
I_{DM}	Drain Current - Pulsed(Note1)	1.36	A
P- Channel MOSFET			
V_{DS}	Drain-Source Voltage	-50	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current -Continuous	-0.18	A
I_{DM}	Drain Current – Pulsed (Note1)	-0.7	A
Power Dissipation, Temperature and Thermal Resistance			
P_D	Power Dissipation	0.15	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient (Note2)	833	$^{\circ}C/W$
T_J	Junction Temperature	150	$^{\circ}C$
T_{stg}	Storage Temperature	-55~+150	$^{\circ}C$
T_L	Lead Temperature	260	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS

$T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
N- Channel MOSFET						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 10	μA
		$V_{GS} = \pm 10V, V_{DS} = 0V$			± 200	nA
		$V_{GS} = \pm 5V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA$	1	1.3	2.5	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 0.2A$		1.1	5.3	Ω
		$V_{GS} = 10V, I_D = 0.5A$		0.9	5	Ω
Diode forward voltage	V_{SD}	$I_S = 0.3A, V_{GS} = 0V$			1.5	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$			40	pF
Output Capacitance	C_{oss}				30	pF
Reverse Transfer Capacitance	C_{rss}				10	pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 50V,$ $R_L = 250\Omega, R_{GEN} = 50\Omega,$			10	ns
Turn-off delay time	$t_{d(off)}$				15	ns
Reverse recovery time	t_{rr}	$I_S = 300mA;$ $d_{IS}/d_t = -100A/s; V_{GS} = 0V;$ $V_R = 25V$		30		ns
Recovered charge	Q_r			30		nC
P- Channel MOSFET						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-50			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -50V, V_{GS} = 0V$			-15	μA
		$V_{DS} = -25V, V_{GS} = 0V$			-0.1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 10	μA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.9	-1.62	-2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -5V, I_D = -0.1A$		5.5	10	Ω
		$V_{GS} = -10V, I_D = -0.1A$		4.1	8	Ω
Forward transconductance (note 3)	g_{FS}	$V_{DS} = -25V, I_D = -0.1A$	0.05			S
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C_{iss}	$V_{DS} = -5V, V_{GS} = 0V, f = 1MHz$		30		pF
Output capacitance	C_{oss}			10		pF
Reverse transfer capacitance	C_{rss}			5		pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V,$ $R_L = 50\Omega, I_D = -2.5A$		2.5		ns
Turn-on rise time	t_r			1		ns
Turn-off delay time	$t_{d(off)}$			16		ns
Turn-off fall time	t_f			8		ns
SOURCE-DRAIN DIODE CHARACTERISTICS (note 4)						
Continuous Current	I_S	$I_S = -0.13A, V_{GS} = 0V$			-0.18	A
Pulsed Current	I_{SM}				-0.7	A
Diode forward voltage (note 3)	V_{DS}				-2.2	V

- Note:**
- Surface mounted on FR-4 board using minimum pad size, 1oz copper
 - Repetitive Rating: Pulse width limited by maximum junction temperature.
 - Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
 - These parameters have no way to verify.



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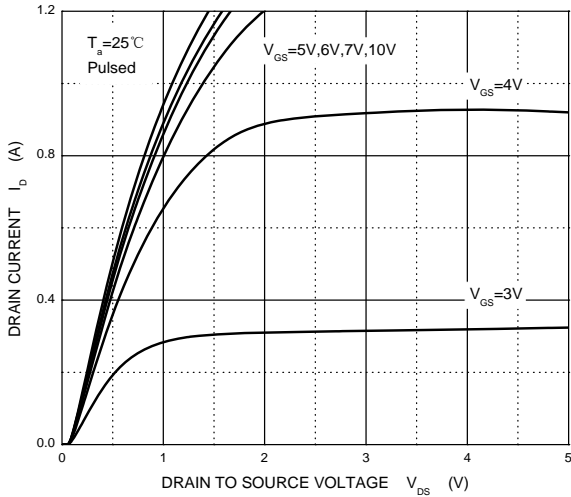


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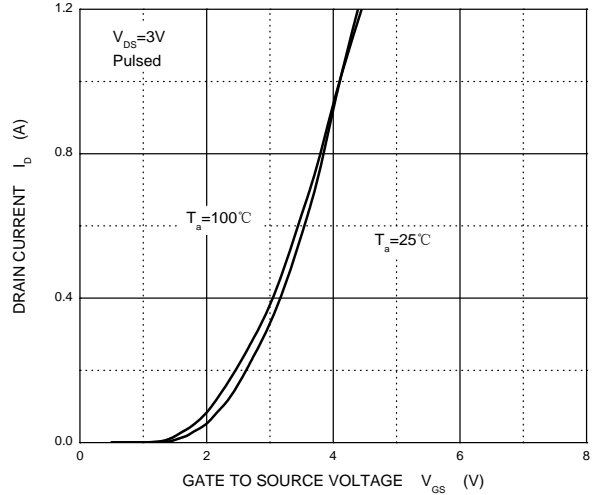
Typical Characteristics

N-Channel MOS

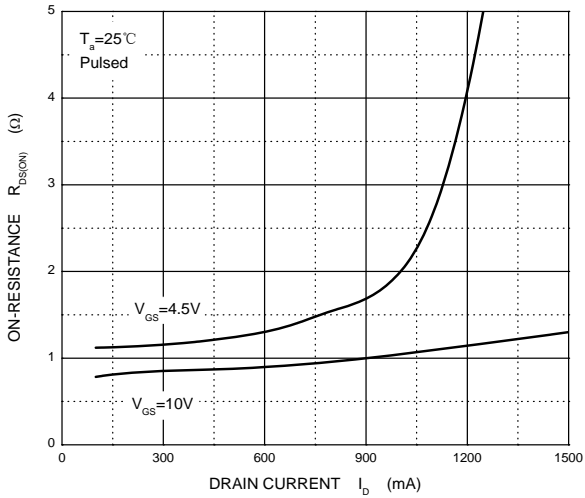
Output Characteristics



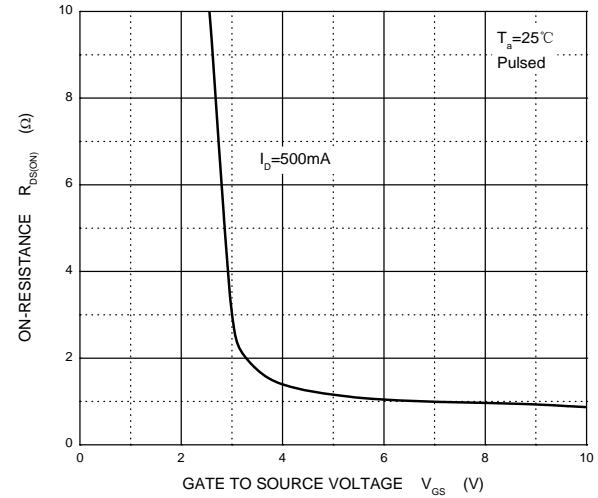
Transfer Characteristics



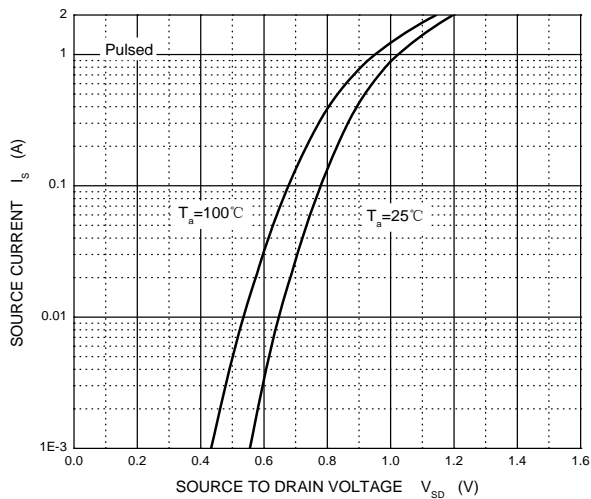
$R_{DS(ON)}$ — I_D



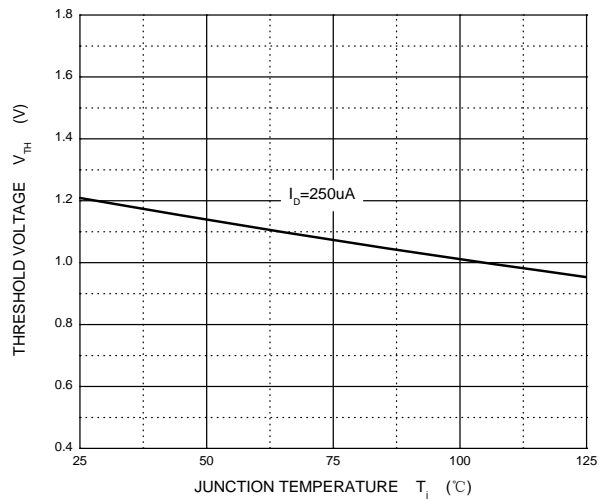
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



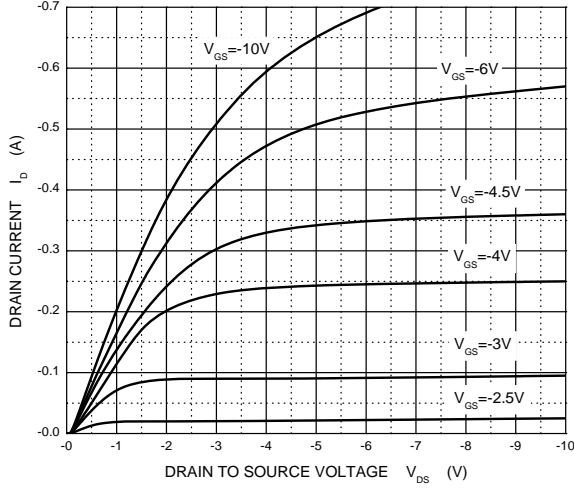
Threshold Voltage



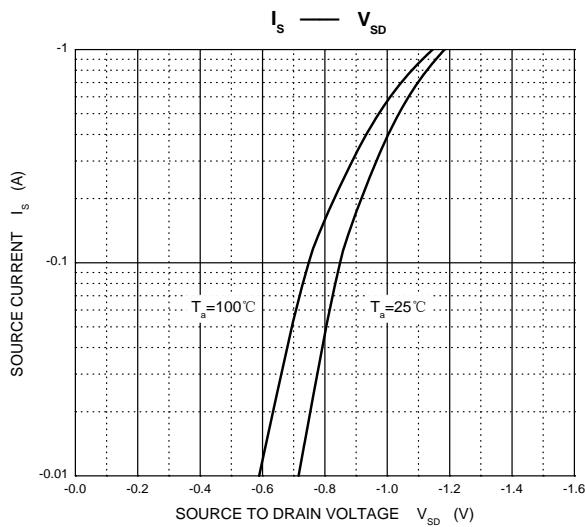
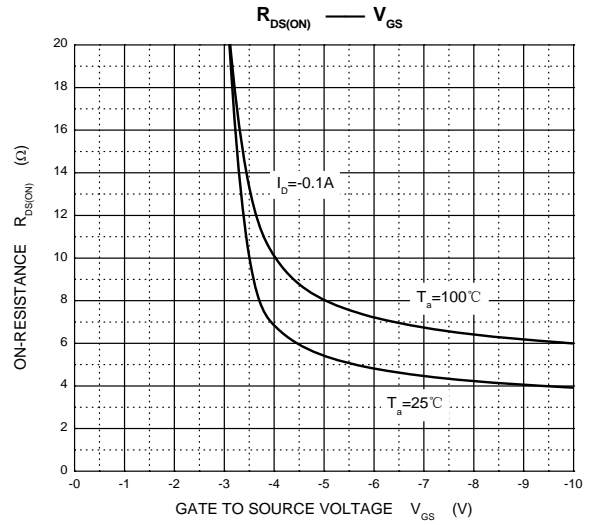
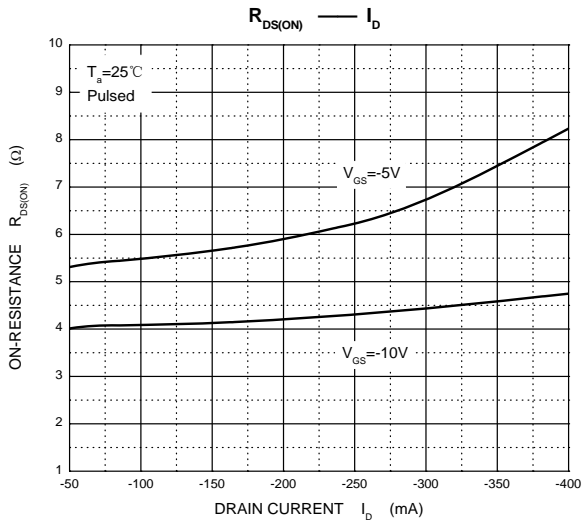
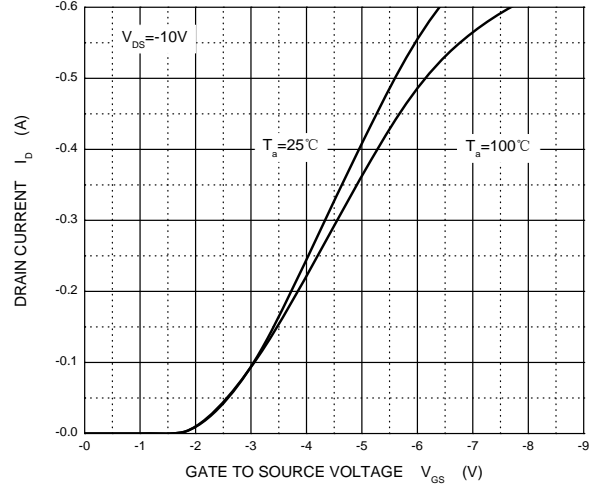
Typical Characteristics

P-Channel MOS

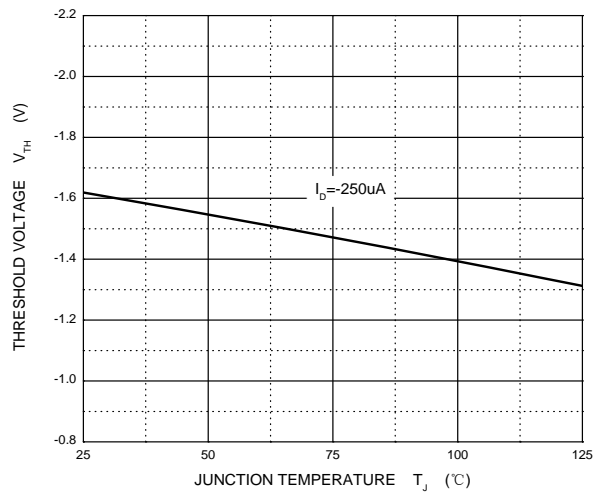
Output Characteristics



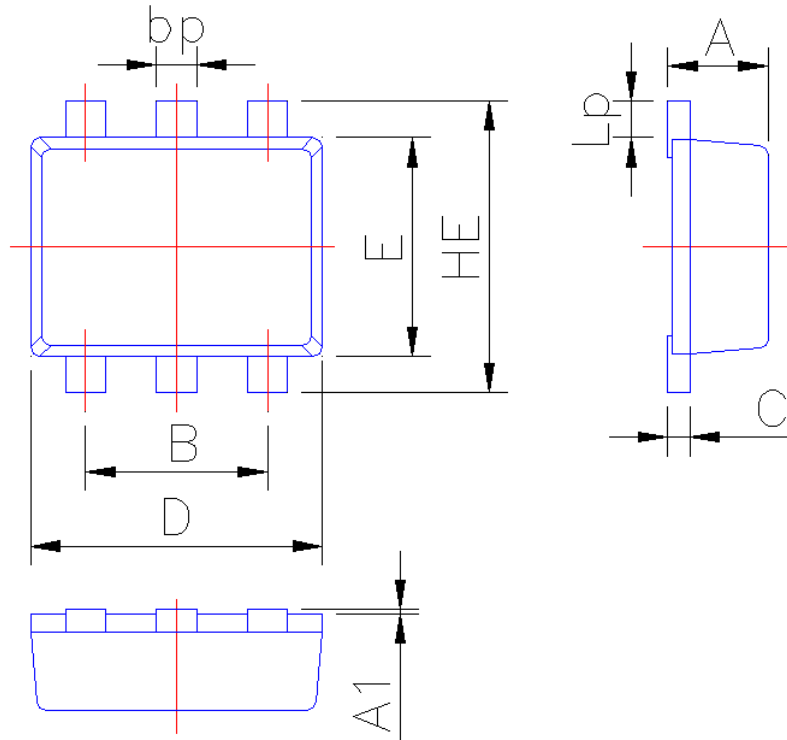
Transfer Characteristics



Threshold Voltage



SOT-563 Package Outline Dimensions



Symbol	Dimension in Millimeters	
	Min	Max
A	0.50	0.60
A1	0	0.05
B	0.95	1.05
bp	0.13	0.30
C	0.09	0.150
D	1.50	1.70
E	1.15	1.35
HE	1.40	1.80
Lp	0.13	0.30