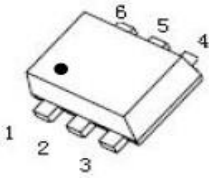
Plastic-Encapsulate MOSFETs

N Channel + P Channel Power MOSFET

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

SOT-563



DESCRIPTION

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

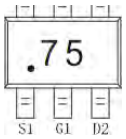
FEATURE

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

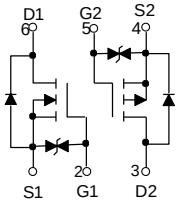
APPLICATION

- 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℃ 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	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55~+150	℃
T_L	Lead Temperature	260	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25 ℃ unless otherwise specified

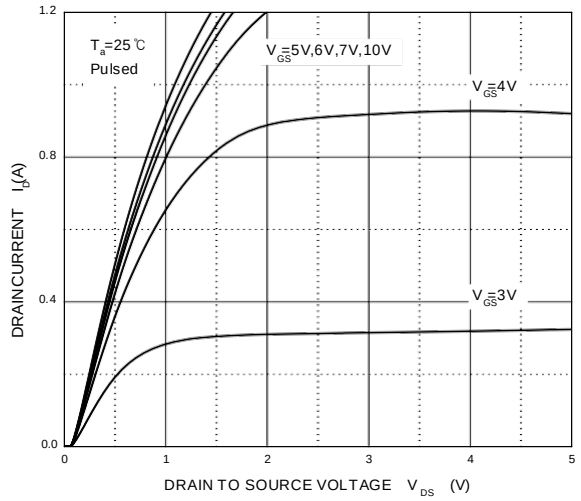
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
N- Channel MOSFET						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=48V,V_{GS}= 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}= 0V			±10	μA
		V_{GS}=±10V, V_{DS}= 0V			±200	nA
		V_{GS}=±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=250Ω,R_{GEN}=50Ω,			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=-250μA	-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}=±20V, V_{DS}= 0V			±10	μA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-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=50Ω, 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				-0.18	A
Pulsed Current	I_{SM}				-0.7	A
Diode forward voltage (note 3)	V_{DS}	I_S=-0.13A, V_{GS}= 0V			-2.2	V

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

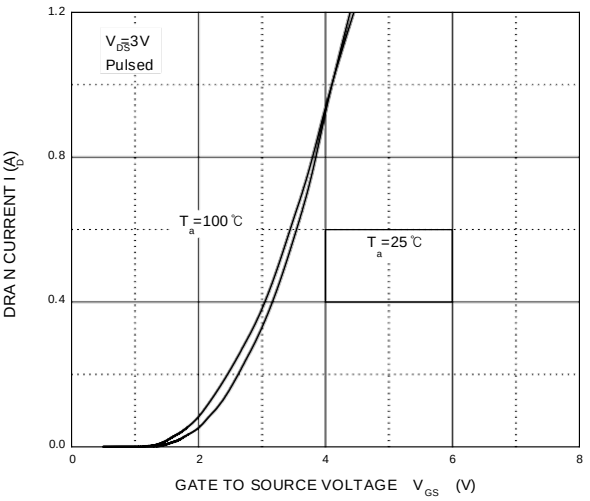
Typical Characteristics

N-Channel MOS

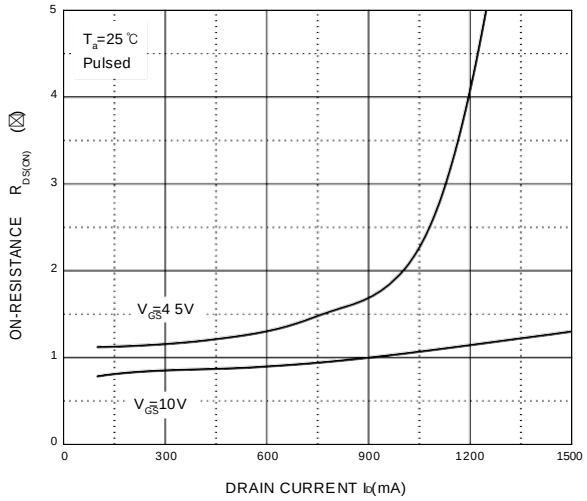
Output Characteristics



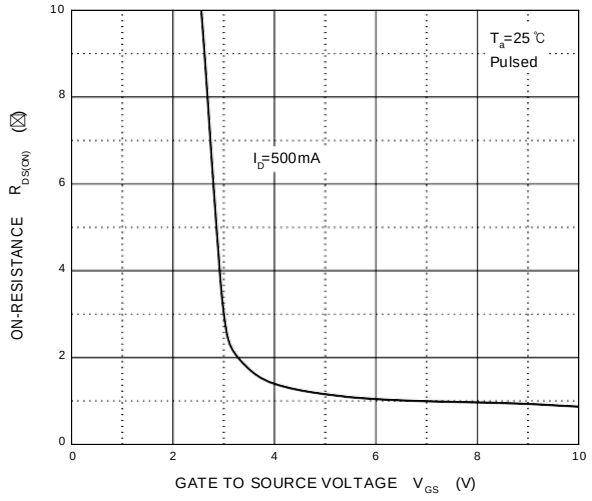
Transfer Characteristics



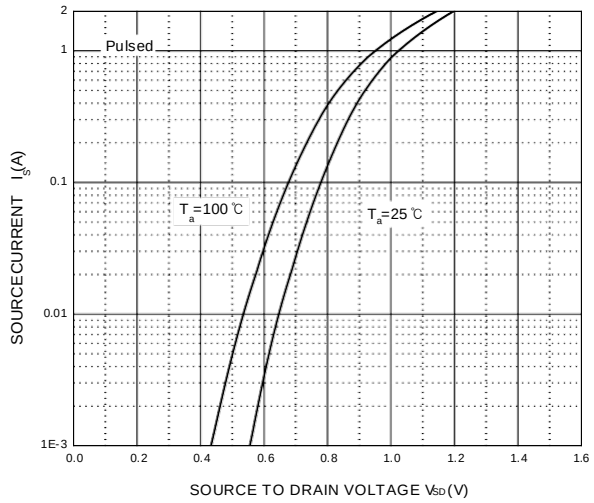
$R_{DS(ON)}$ —— I_D



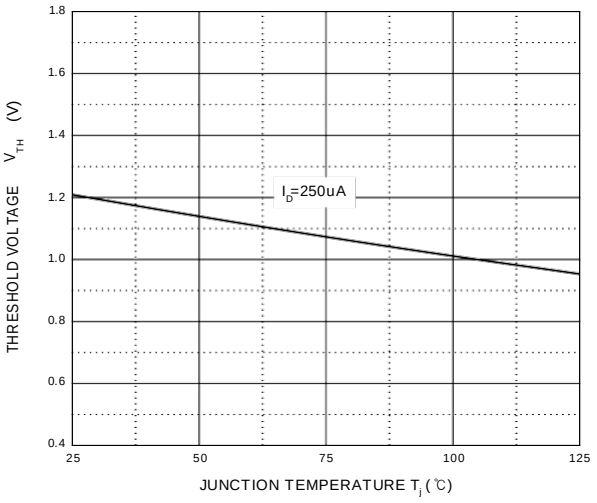
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



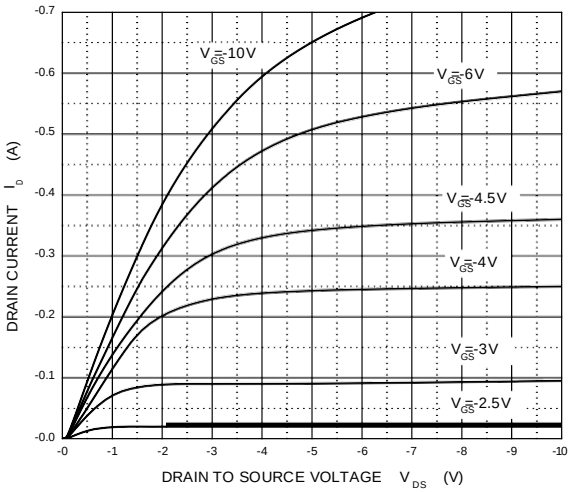
Threshold Voltage



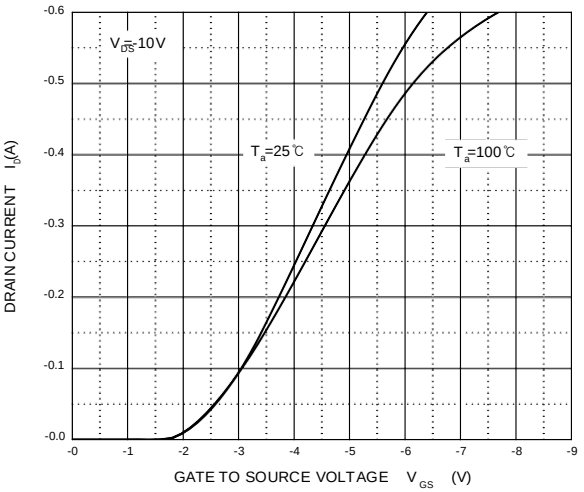
Typical Characteristics

P-Channel MOS

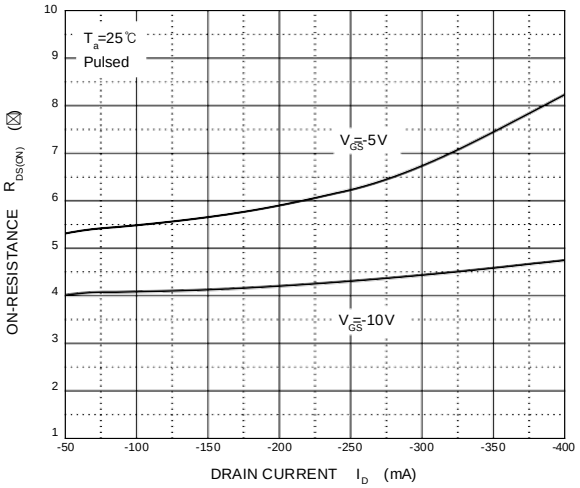
Output Characteristics



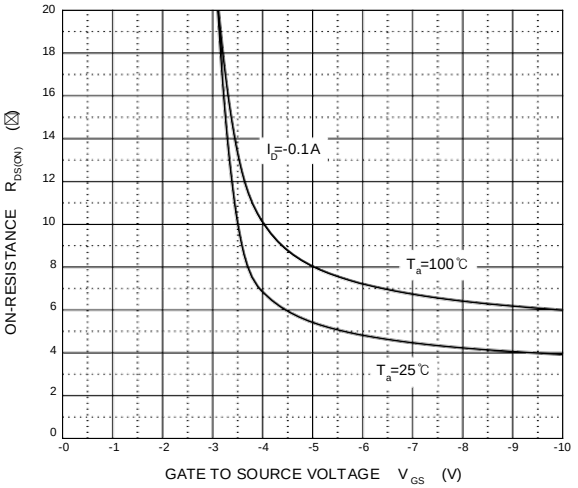
Transfer Characteristics



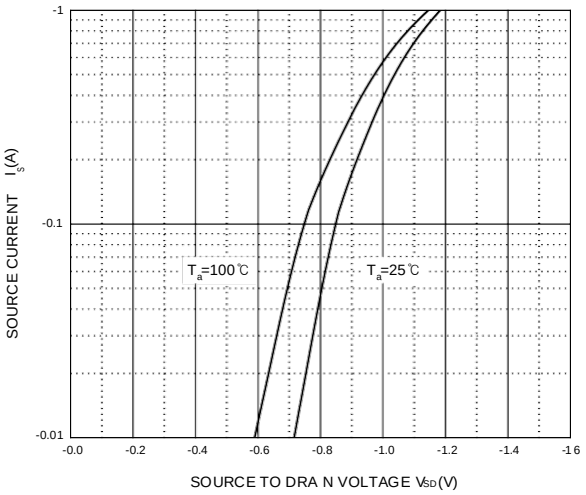
$R_{DS(ON)}$ —— I_D



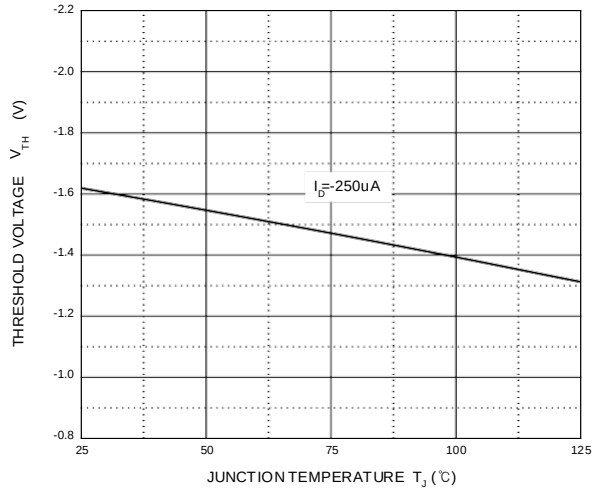
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage



ne Dimensions

Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.00
A1	0.010	0.100
B	1.20	1.40
bp	0.25	0.45
C	0.09	0.15
D	2.00	2.20
E	1.15	1.35
HE	2.15	2.55
Lp	0.25	0.46
θ	0º	6º