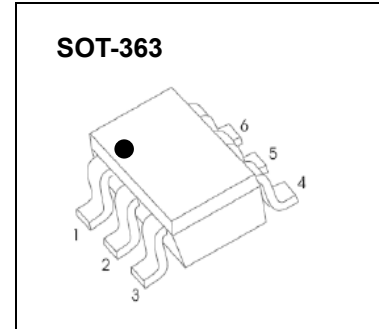


### Plastic-Encapsulate MOSFETs

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  $R_{DS(ON)}$ .

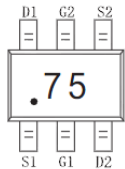
#### FEATURE

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

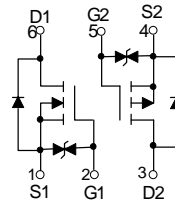
#### APPLICATION

- 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
<b>N-Channel MOSFET</b>			
$V_{DS}$	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
<b>P- Channel MOSFET</b>			
$V_{DS}$	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
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
$P_D$	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<sub>a</sub>=25 °C unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>N- Channel MOSFET</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±10	μA
		V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V			±200	nA
		V <sub>GS</sub> = ±5V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA	1	1.3	2.5	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.2A		1.1	5.3	Ω
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A		0.9	5	Ω
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> = 0.3A, V <sub>GS</sub> = 0V			1.5	V
<b>DYNAMIC PARAMETERS (note 4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz			40	pF
Output Capacitance	C <sub>oss</sub>				30	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				10	pF
<b>SWITCHING PARAMETERS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 50V, R <sub>L</sub> = 250Ω, R <sub>GEN</sub> = 50Ω,			10	ns
Turn-off delay time	t <sub>d(off)</sub>				15	ns
Reverse recovery time	t <sub>rr</sub>	I <sub>S</sub> = 300mA; d <sub>IS</sub> /d <sub>I</sub> = -100A/s; V <sub>GS</sub> = 0V; V <sub>R</sub> = 25V		30		ns
Recovered charge	Q <sub>r</sub>			30		nC
<b>P- Channel MOSFET</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-50			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V			-15	μA
		V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V			-0.1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±10	μA
Gate threshold voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.9	-1.62	-2	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> = -5V, I <sub>D</sub> = -0.1A		5.5	10	Ω
		V <sub>GS</sub> = -10V, I <sub>D</sub> = -0.1A		4.1	8	Ω
Forward transconductance (note 3)	g <sub>FS</sub>	V <sub>DS</sub> = -25V, I <sub>D</sub> = -0.1A	0.05			S
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -5V, V <sub>GS</sub> = 0V, f = 1MHz		30		pF
Output capacitance	C <sub>oss</sub>			10		pF
Reverse transfer capacitance	C <sub>rss</sub>			5		pF
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, R <sub>L</sub> = 50Ω, I <sub>D</sub> = -2.5A		2.5		ns
Turn-on rise time	t <sub>r</sub>			1		ns
Turn-off delay time	t <sub>d(off)</sub>			16		ns
Turn-off fall time	t <sub>f</sub>			8		ns
<b>SOURCE-DRAIN DIODE CHARACTERISTICS (note 4)</b>						
Continuous Current	I <sub>S</sub>	I <sub>S</sub> = -0.13A, V <sub>GS</sub> = 0V			-0.18	A
Pulsed Current	I <sub>SM</sub>				-0.7	A
Diode forward voltage (note 3)	V <sub>DS</sub>				-2.2	V

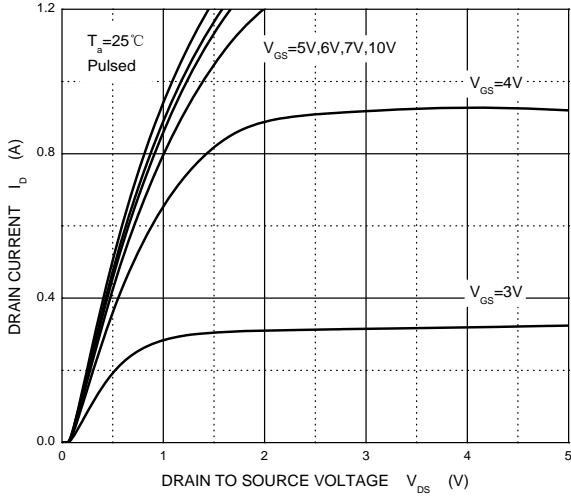
- Note:**
- 1、 Surface mounted on FR-4 board using minimum pad size, 1oz copper
  - 2、 Repetitive Rating: Pulse width limited by maximum junction temperature.
  - 3、 Pulse test: pulse width ≤ 300μ s, duty cycle ≤ 2%
  - 4、 These parameters have no way to verify.



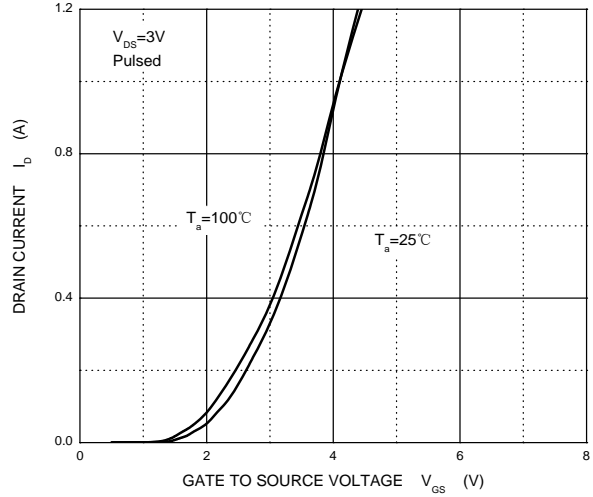
Typical Characteristics

N-Channel MOS

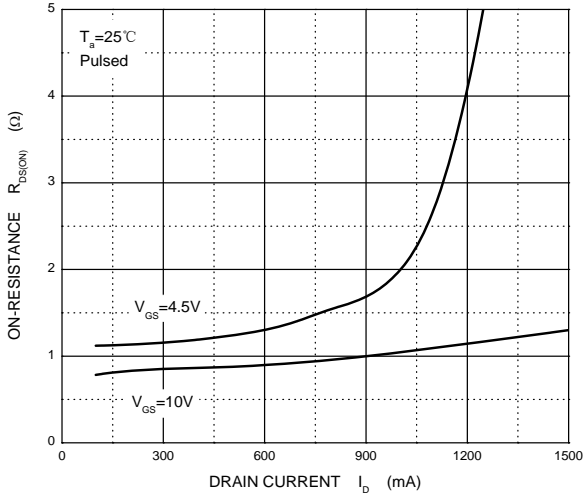
Output Characteristics



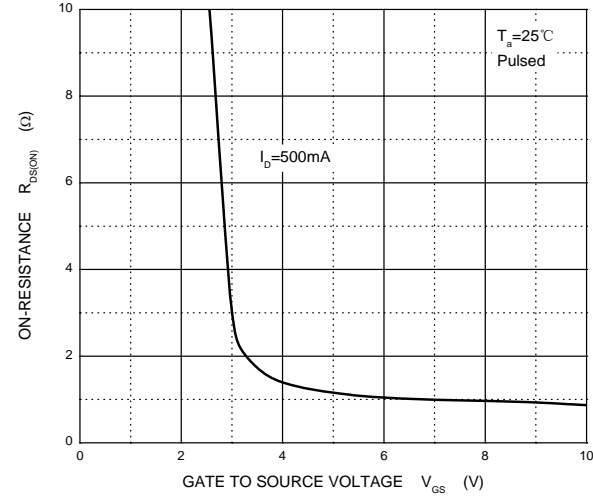
Transfer Characteristics



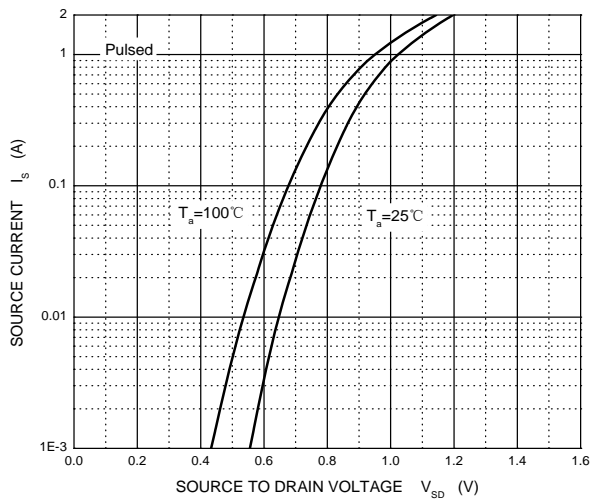
$R_{DS(ON)}$  —  $I_D$



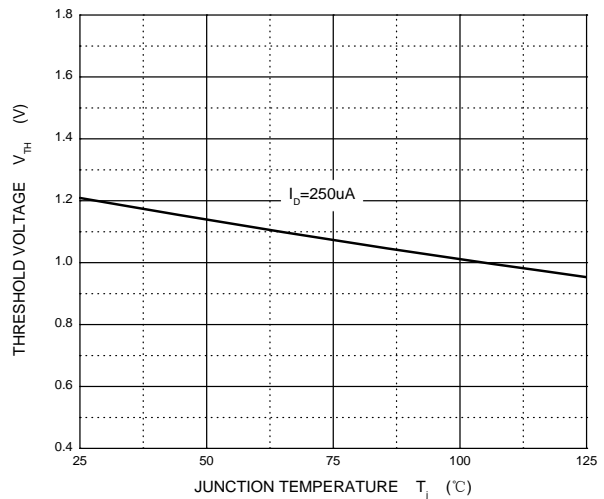
$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage

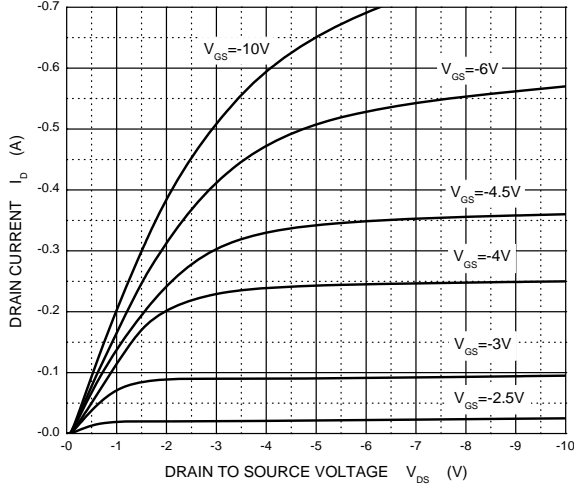




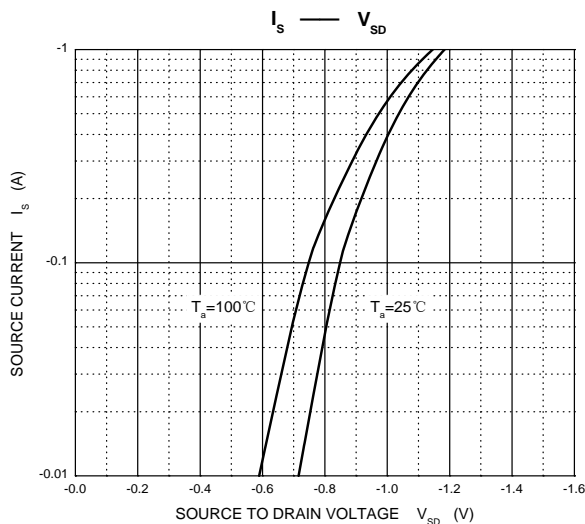
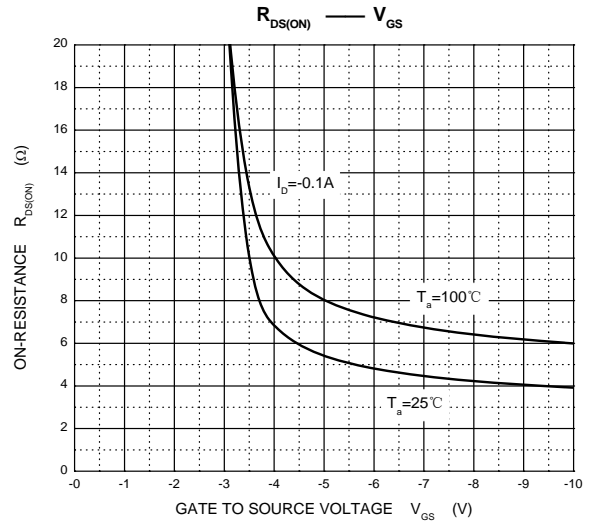
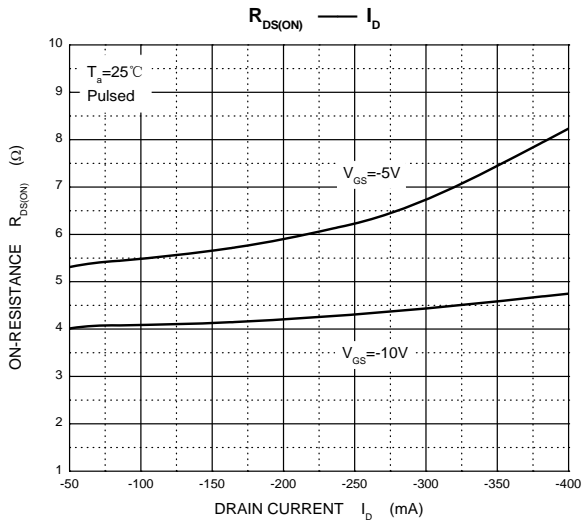
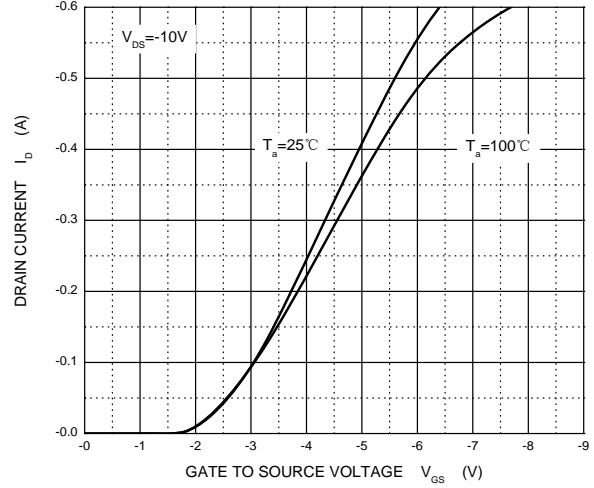
Typical Characteristics

P-Channel MOS

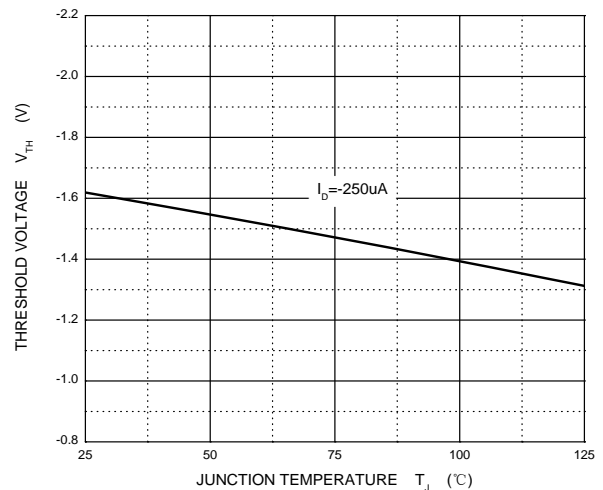
Output Characteristics



Transfer Characteristics

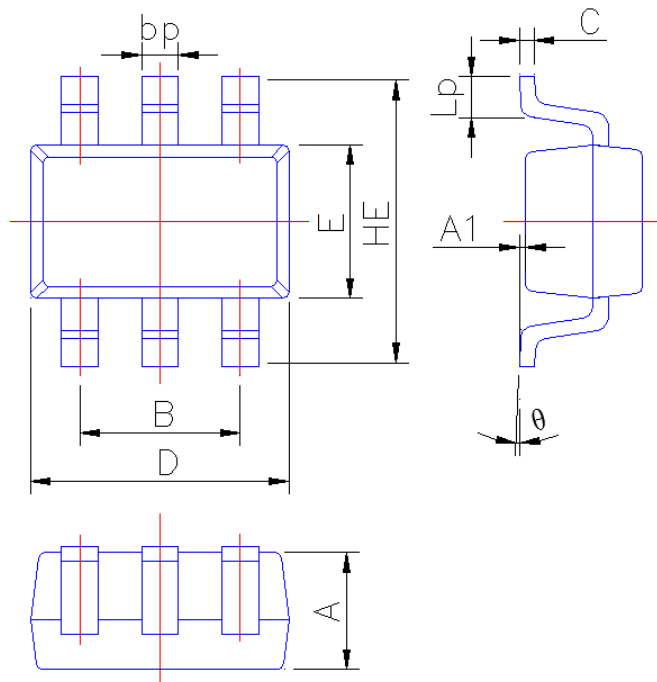


Threshold Voltage





## SOT-363 Package Outline 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
$\theta$	0°	6°