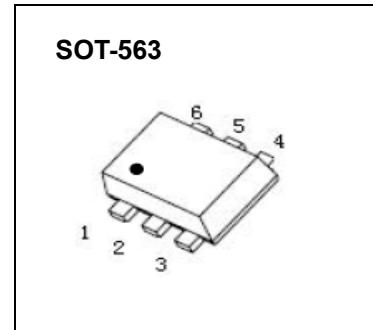


Plastic-Encapsulate MOSFETs

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)}.

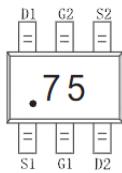
FEATURE

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

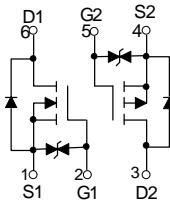
APPLICATION

- 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°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 _{θJA}	Thermal Resistance from Junction to Ambient (Note2)	833	°C/W
T _j	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
T _L	Lead Temperature	260	°C

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

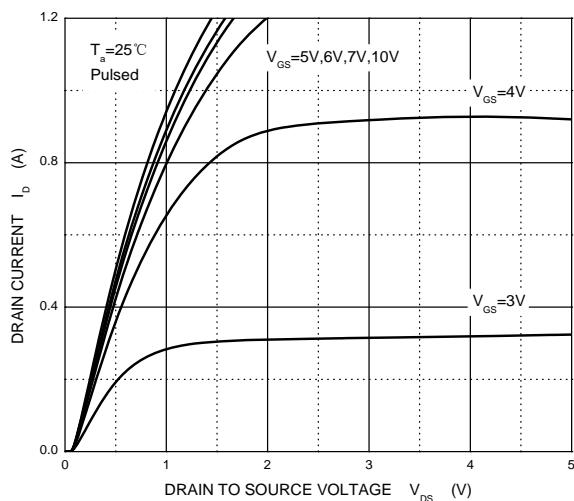
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
N-Channel MOSFET						
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_{\text{D}} = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{\text{DS}} = 48\text{V}, V_{\text{GS}} = 0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$			± 10	μA
		$V_{\text{GS}} = \pm 10\text{V}, V_{\text{DS}} = 0\text{V}$			± 200	nA
		$V_{\text{GS}} = \pm 5\text{V}, V_{\text{DS}} = 0\text{V}$			± 100	nA
Gate threshold voltage (note 3)	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = 1\text{mA}$	1	1.3	2.5	V
Drain-source on-resistance (note 3)	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 4.5\text{V}, I_{\text{D}} = 0.2\text{A}$		1.1	5.3	Ω
		$V_{\text{GS}} = 10\text{V}, I_{\text{D}} = 0.5\text{A}$		0.9	5	Ω
Diode forward voltage	V_{SD}	$I_{\text{S}} = 0.3\text{A}, V_{\text{GS}} = 0\text{V}$			1.5	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	$V_{\text{DS}} = 10\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$			40	pF
Output Capacitance	C_{oss}				30	pF
Reverse Transfer Capacitance	C_{rss}				10	pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{\text{d}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, V_{\text{DD}} = 50\text{V}, R_{\text{L}} = 250\Omega, R_{\text{GEN}} = 50\Omega,$ $I_{\text{S}} = 300\text{mA}; d_{\text{IS}}/dt = -100\text{A/s}; V_{\text{GS}} = 0\text{V}; V_{\text{R}} = 25\text{V}$			10	ns
Turn-off delay time	$t_{\text{d}(\text{off})}$				15	ns
Reverse recovery time	t_{rr}			30		ns
Recovered charge	Q_{r}			30		nC
P-Channel MOSFET						
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_{\text{D}} = -250\mu\text{A}$	-50			V
Zero gate voltage drain current	I_{DSS}	$V_{\text{DS}} = -50\text{V}, V_{\text{GS}} = 0\text{V}$			-15	μA
		$V_{\text{DS}} = -25\text{V}, V_{\text{GS}} = 0\text{V}$			-0.1	μA
Gate-body leakage current	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$			± 10	μA
Gate threshold voltage (note 3)	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = -250\mu\text{A}$	-0.9	-1.62	-2	V
Drain-source on-resistance (note 3)	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = -5\text{V}, I_{\text{D}} = -0.1\text{A}$		5.5	10	Ω
		$V_{\text{GS}} = -10\text{V}, I_{\text{D}} = -0.1\text{A}$		4.1	8	Ω
Forward transconductance (note 3)	g_{FS}	$V_{\text{DS}} = -25\text{V}, I_{\text{D}} = -0.1\text{A}$	0.05			S
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C_{iss}	$V_{\text{DS}} = -5\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$		30		pF
Output capacitance	C_{oss}			10		pF
Reverse transfer capacitance	C_{rss}			5		pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = -15\text{V}, R_{\text{L}} = 50\Omega, I_{\text{D}} = -2.5\text{A}$		2.5		ns
Turn-on rise time	t_{r}			1		ns
Turn-off delay time	$t_{\text{d}(\text{off})}$			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}	$I_{\text{S}} = -0.13\text{A}, V_{\text{GS}} = 0\text{V}$			-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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
 - These parameters have no way to verify.

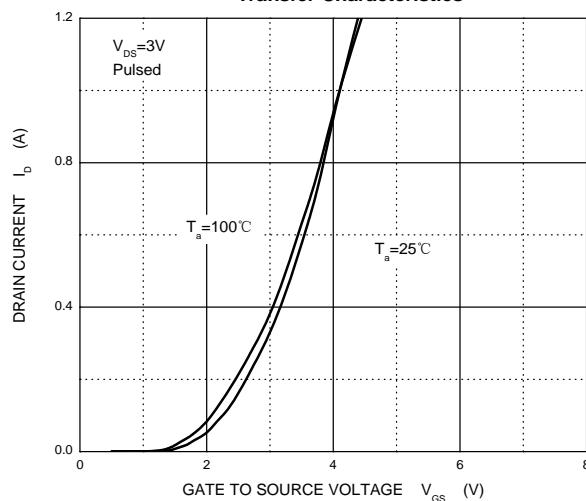
Typical Characteristics

N-Channel MOS

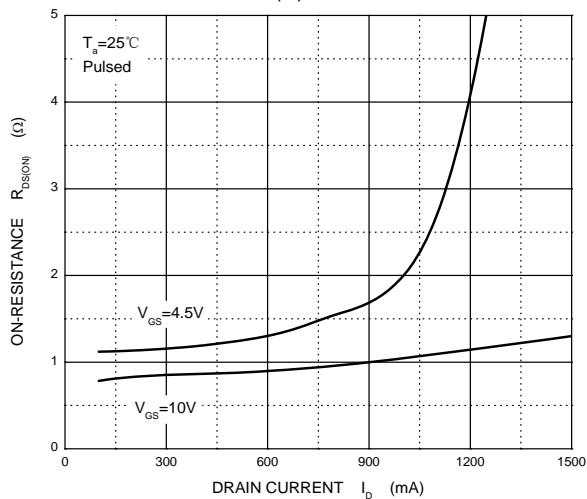
Output Characteristics



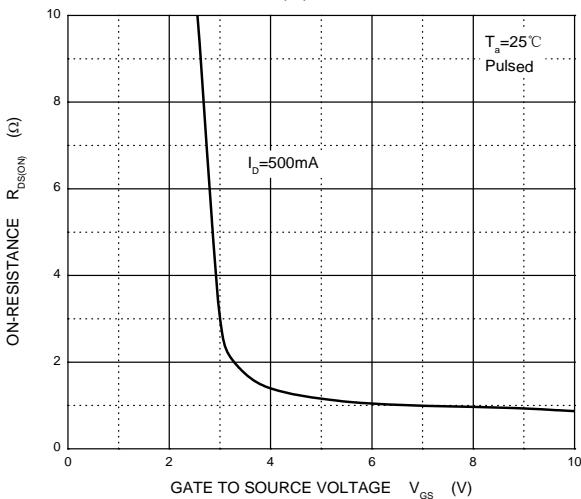
Transfer Characteristics



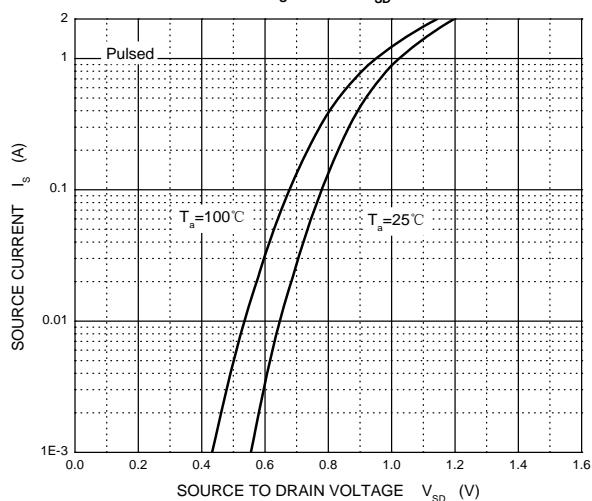
$R_{DS(ON)}$ — I_D



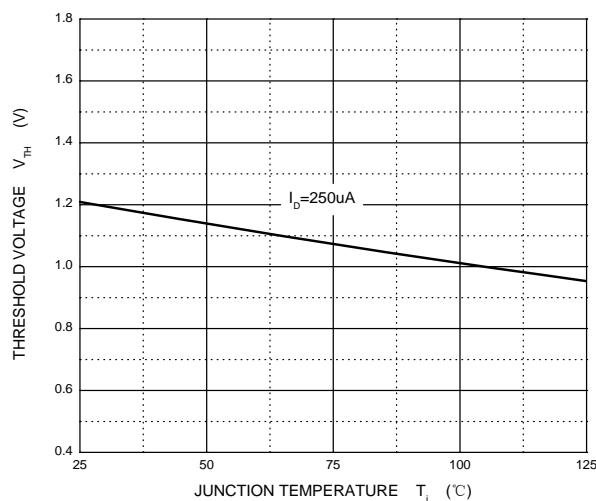
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

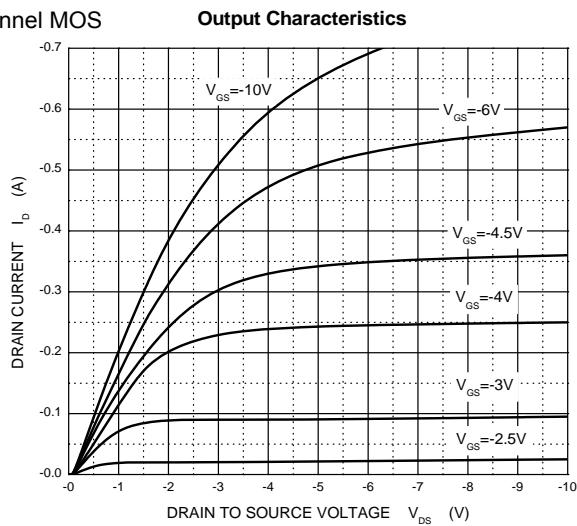


Threshold Voltage



Typical Characteristics

P-Channel MOS



Transfer Characteristics

