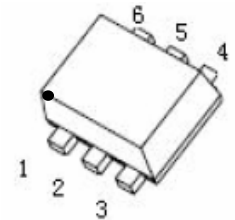
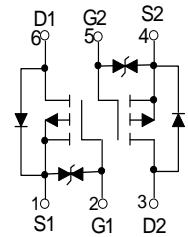




### MT3139KV Plastic-Encapsulate MOSFETS

Dual P-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-20V	520mΩ@-4.5V	-0.66A
	700mΩ@-2.5V	
	950mΩ(TYP)@-1.8V	



SOT-563

#### GENERAL DESCRIPTION

This Dual P-Channel MOSFET has been designed using advanced Power Trench process to optimize the  $R_{DS(ON)}$ .

Including two P-ch BC3139K MOSFET (independently) in a package.

#### FEATURE

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

#### APPLICATION

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

#### MARKING : 39K

Maximum ratings ( $T_a=25^{\circ}C$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	$V_{DSS}$	-20	V
Typical Gate-Source Voltage	$V_{GS}$	±12	
Drain Current-Continuous	$I_{D(DC)}$	-0.66	A
Drain Current -Pulsed(note1)	$I_{DM(pulse)}$	-2.64	
Power Dissipation (note 2)	$P_D$	150	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^{\circ}C/W$
Storage Temperature	$T_j$	150	$^{\circ}C$
Junction Temperature	$T_{stg}$	-55 ~+150	



### MOSFET ELECTRICAL CHARACTERISTICS

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

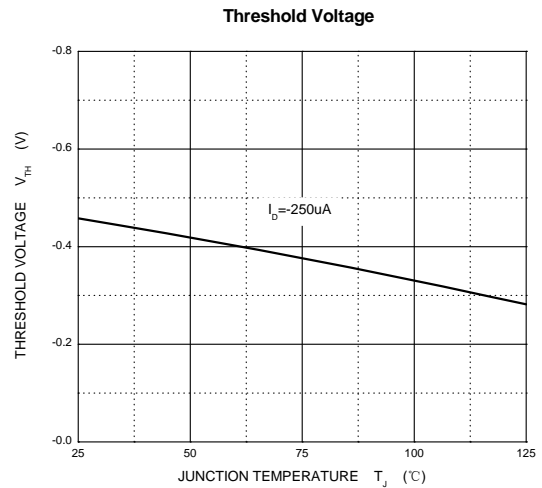
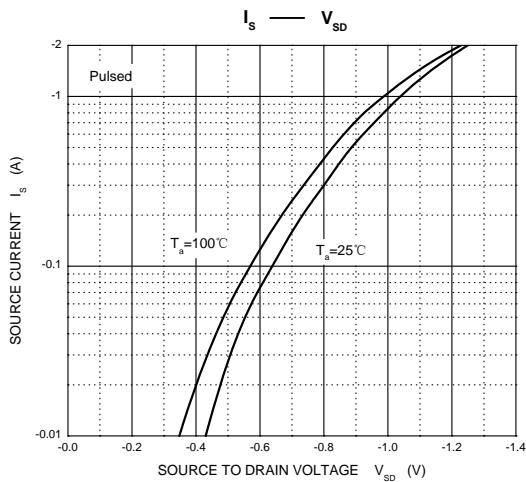
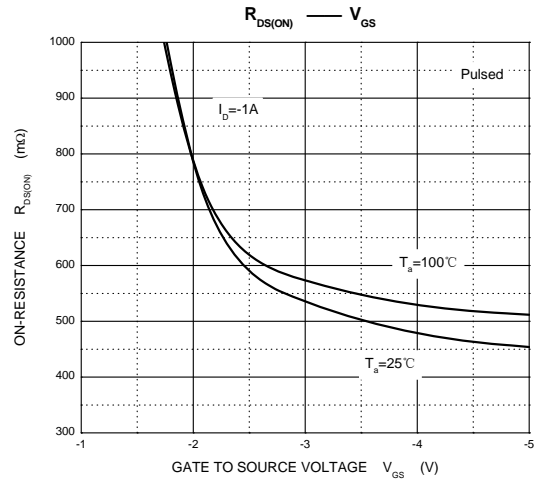
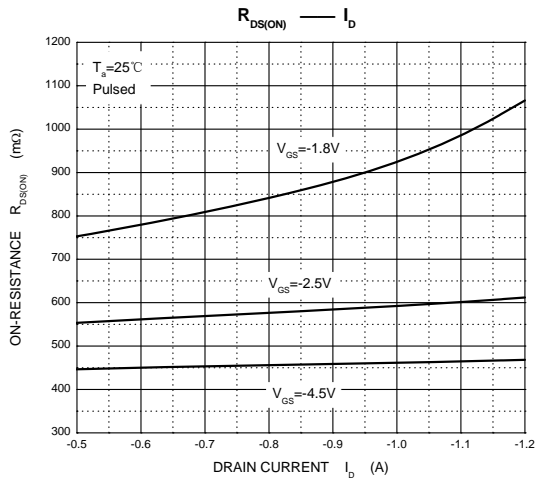
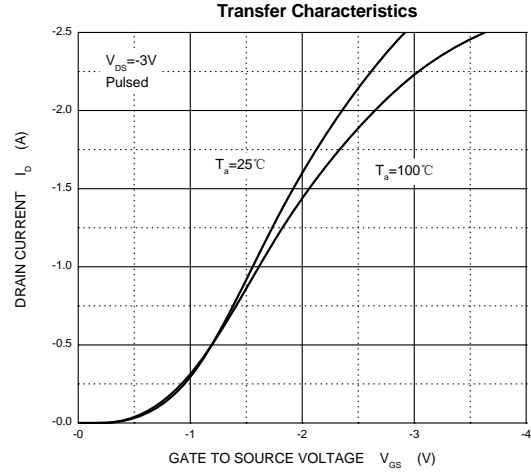
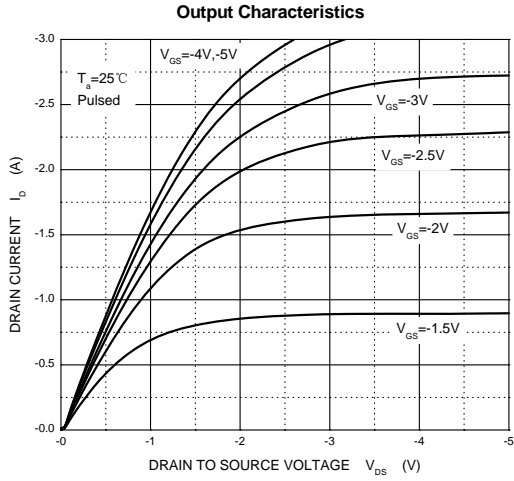
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>On/Off States</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-Threshold Voltage(note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.35		-1.1	
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 10V$			$\pm 20$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	$\mu A$
Drain-Source On-State Resistance(note 3)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -1A$		450	520	m $\Omega$
		$V_{GS} = -2.5V, I_D = -800mA$		575	700	
		$V_{GS} = -1.8V, I_D = -500mA$		950		
Forward Transconductance	$g_{fs}$	$V_{DS} = -10V, I_D = -540mA$	0.8			S
<b>Dynamic Characteristics(note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -16V, V_{GS} = 0V, f = 1MHz$			170	pF
Output Capacitance	$C_{oss}$				25	
Reverse Transfer Capacitance	$C_{rss}$				15	
<b>Switching Times (note 4)</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10V,$ $I_D = -200mA,$ $V_{GS} = -4.5V, R_G = 10\Omega$		9		ns
Rise Time	$t_r$			5.8		
Turn-Off Delay Time	$t_{d(off)}$			32.7		
Fall Time	$t_f$			20.3		
<b>Drain-Source Diode Characteristics</b>						
Drain-Source Diode Forward Voltage (note 3)	$V_{SD}$	$I_S = -0.5A, V_{GS} = 0V$			-1.2	V

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at  $T_a=25^{\circ}\text{C}$ .
3. Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$ .
4. These parameters have no way to verify.

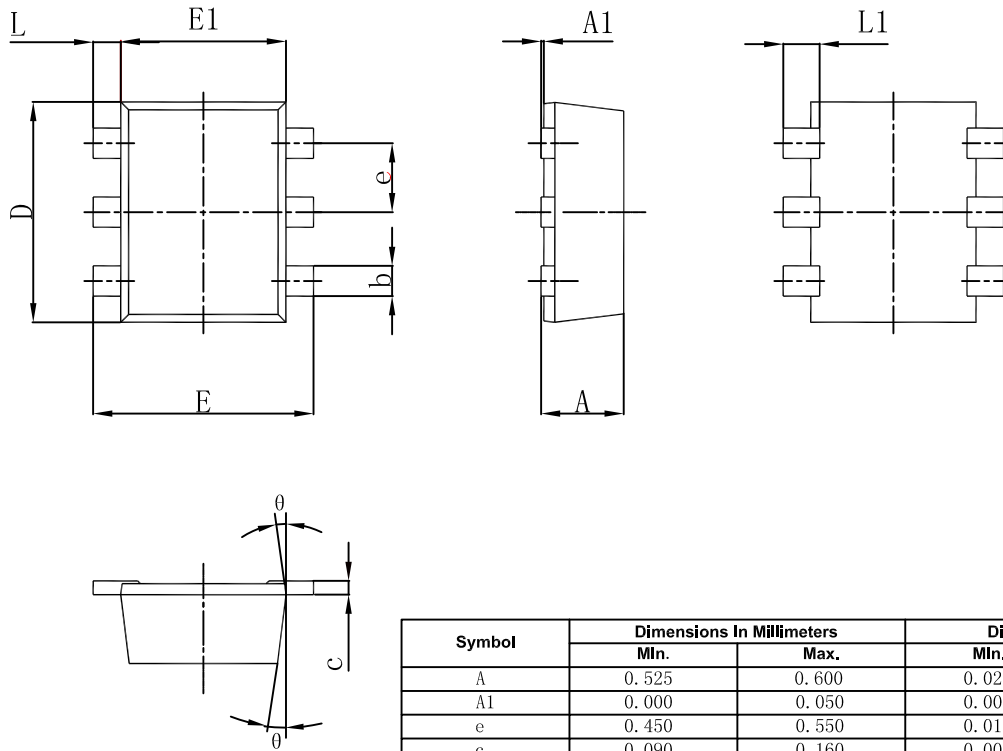


## Typical Characteristics



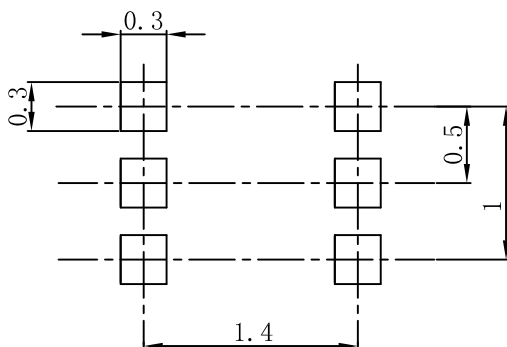


### SOT-563 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
θ	7 °REF.		7 °REF.	

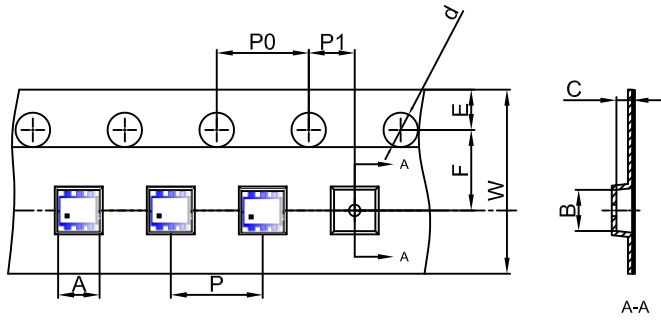
### SOT-563 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.



### SOT-563 Embossed Carrier Tape



#### Packaging Description:

SOT-563 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-563	1.78	1.78	0.69	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

### SOT-563 Tape Leader and Trailer

