

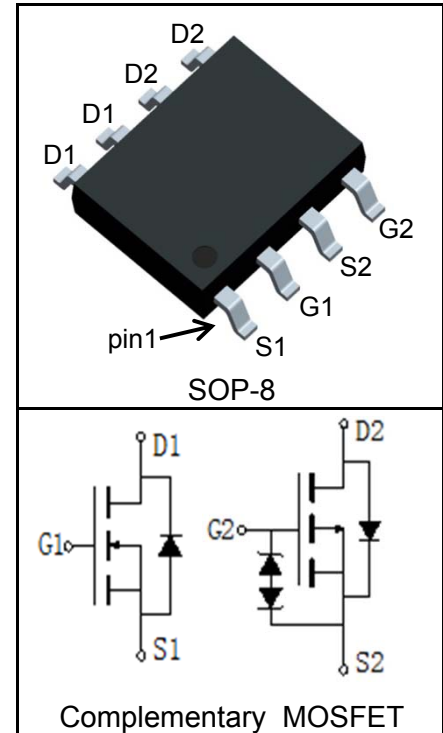
### Features

- N-Channel  
30V/10A,  
 $R_{DS(ON)} = 16m\Omega$  (Typ.) @  $V_{GS} = 10V$   
 $R_{DS(ON)} = 32m\Omega$  (Typ.) @  $V_{GS} = 4.5V$
- P-Channel  
-30V/-8A,  
 $R_{DS(ON)} = 16m\Omega$  (Typ.) @  $V_{GS} = -10V$   
 $R_{DS(ON)} = 23m\Omega$  (Typ.) @  $V_{GS} = -4.5V$
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Devices Available (RoHS Compliant)

### Applications

- Load Switch

### Pin Description



### Absolute Maximum Ratings

Symbol	Parameter	N-Channel	P-Channel	Unit	
<b>Common Ratings</b> ( $T_A = 25^\circ C$ Unless Otherwise Noted)					
$V_{DSS}$	Drain-Source Voltage	30	-30	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	$\pm 12$		
$T_J$	Maximum Junction Temperature	150	150	$^\circ C$	
$T_{STG}$	Storage Temperature Range	-55 to 150	-55 to 150	$^\circ C$	
$I_S$	Diode Continuous Forward Current	$T_A = 25^\circ C$	10	-4	A
<b>Mounted on Large Heat Sink</b>					
$I_{DP}^{①}$	300 $\mu s$ Pulse Drain Current Tested	$T_A = 25^\circ C$	40	-32	A
$I_D^{②}$	Continuous Drain Current ( $V_{GS} = \pm 10V$ )	$T_A = 25^\circ C$	10	-8	A
		$T_A = 70^\circ C$	6.3	-5	
$P_D$	Maximum Power Dissipation	$T_A = 25^\circ C$	2	2	W
		$T_A = 70^\circ C$	1.3	1.3	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	TBD	TBD	$^\circ C/W$	
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	62.5	62.5	$^\circ C/W$	
<b>Drain-Source Avalanche Ratings</b>					
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	TBD	TBD	mJ	

**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU30C10H			Unit	
			Min.	Typ.	Max.		
<b>Static Characteristics</b>							
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	N	30		V	
		$V_{GS}=0V, I_{DS}=-250\mu A$	P	-30			
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	N		1	$\mu A$	
		$T_J=125^\circ C$			30		
		$V_{DS}=-30V, V_{GS}=0V$	P		-1		
		$T_J=125^\circ C$			-30		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	N	1	2.4	V	
		$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	P	-1.2	-2.4		
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	N		$\pm 100$	nA	
		$V_{GS}=\pm 12V, V_{DS}=0V$	P		$\pm 10$	$\mu A$	
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=10A$	N		16	20	m $\Omega$
		$V_{GS}=-10V, I_{DS}=-8A$	P		16	20	
		$V_{GS}=4.5V, I_{DS}=8A$	N		32	40	
		$V_{GS}=-4.5V, I_{DS}=-6A$	P		23	35	
<b>Diode Characteristics</b>							
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=10A, V_{GS}=0V$	N		1.2	V	
		$I_{SD}=-4A, V_{GS}=0V$	P		-1.2		
$t_{rr}$	Reverse Recovery Time	N-Channel $I_{SD}=10A, dl_{SD}/dt=100A/\mu s$	N		15	ns	
			P		17		
$Q_{rr}$	Reverse Recovery Charge	P-Channel $I_{SD}=-8A, dl_{SD}/dt=100A/\mu s$	N		8	nC	
			P		9		
<b>Dynamic Characteristics<sup>(6)</sup></b>							
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	N		1.5	$\Omega$	
			P		3		
$C_{iss}$	Input Capacitance	N-Channel $V_{GS}=0V, V_{DS}=15V,$ Frequency=1.0MHz	N		590	pF	
			P		780		
$C_{oss}$	Output Capacitance	P-Channel $V_{GS}=0V, V_{DS}=-15V,$ Frequency=1.0MHz	N		125		
			P		155		
$C_{rss}$	Reverse Transfer Capacitance	N-Channel $V_{GS}=0V, V_{DS}=-15V,$ Frequency=1.0MHz	N		90		
			P		95		

**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  Unless Otherwise Noted)

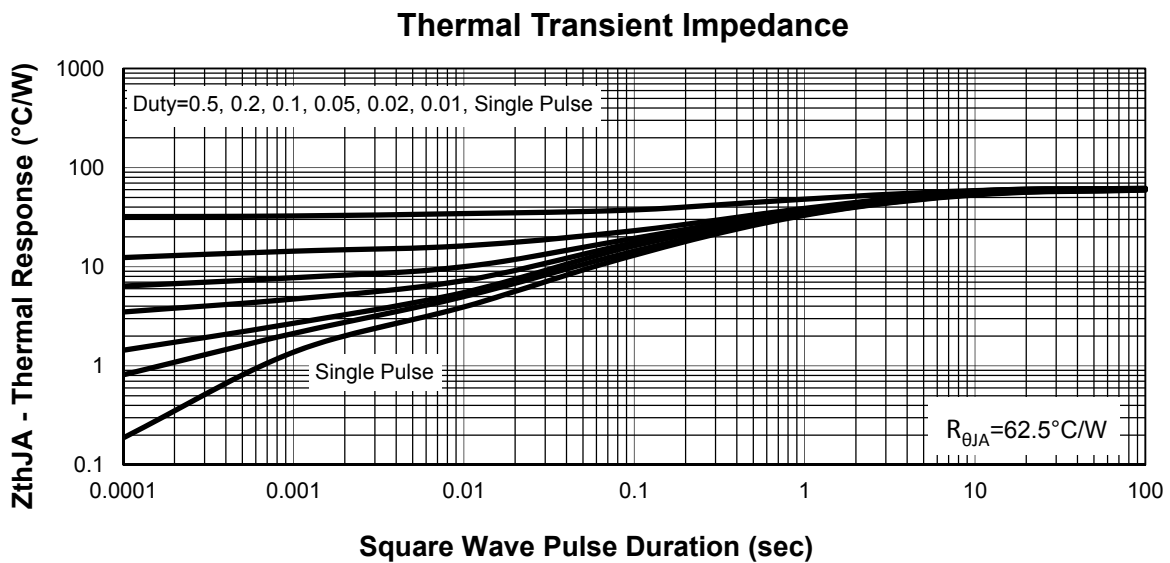
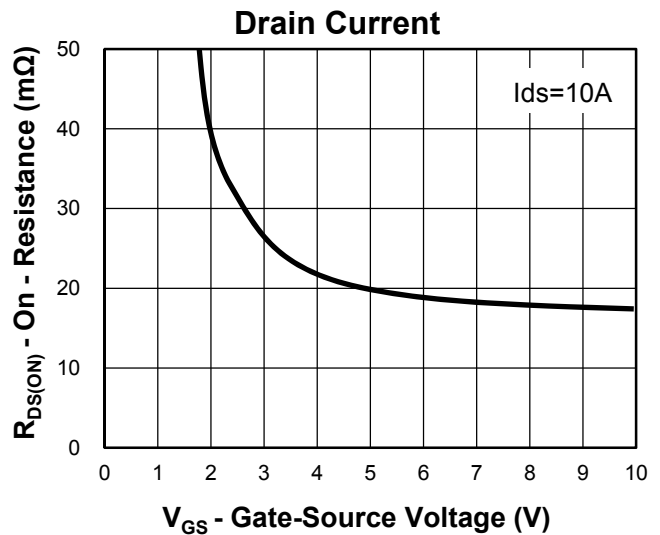
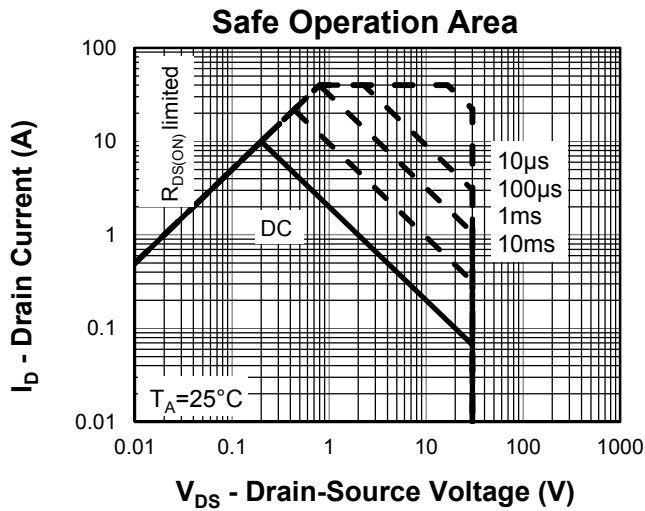
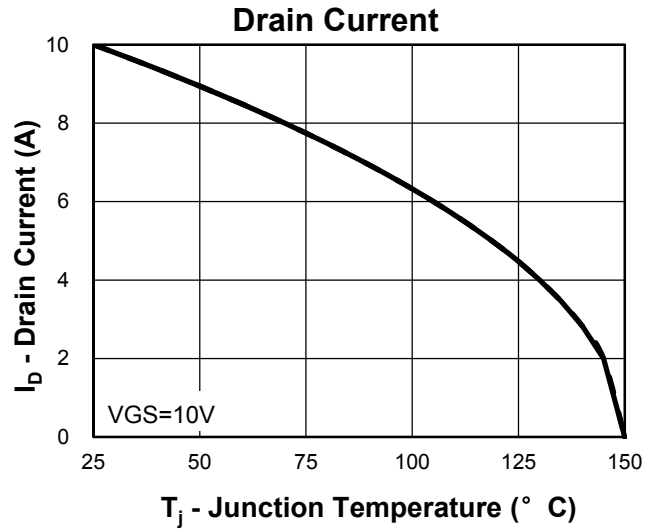
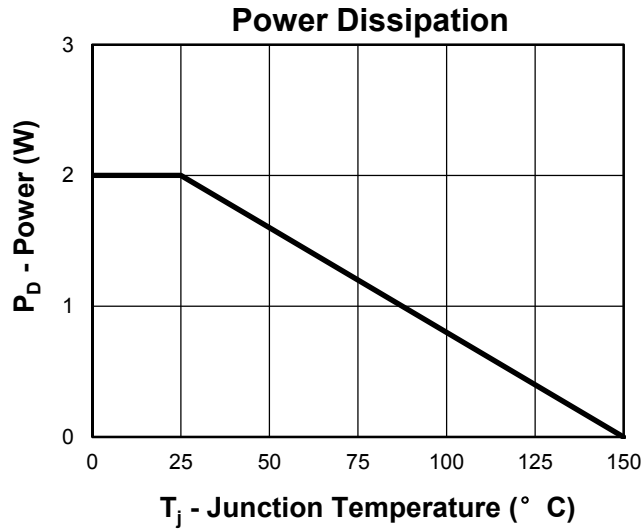
Symbol	Parameter	Test Condition	RU30C10H			Unit	
			Min.	Typ.	Max.		
<b>Dynamic Characteristics</b> <sup>⑥</sup>							
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=15\text{V}, I_{DS}=10\text{A},$ $V_{GEN}=10\text{V}, R_G=4.7\Omega$  P-Channel $V_{DD}=-15\text{V}, I_{DS}=-8\text{A},$ $V_{GEN}=-10\text{V}, R_G=4.7\Omega$	N		8		ns
			P		9		
$t_r$	Turn-on Rise Time		N		15		
			P		6		
$t_{d(OFF)}$	Turn-off Delay Time		N		33		
			P		21		
$t_f$	Turn-off Fall Time		N		13		
			P		7		
<b>Gate Charge Characteristics</b> <sup>⑥</sup>							
$Q_g$	Total Gate Charge	N-Channel $V_{DS}=24\text{V}, V_{GS}=10\text{V},$ $I_{DS}=10\text{A}$  P-Channel $V_{DS}=-24\text{V}, V_{GS}=-10\text{V},$ $I_{DS}=-8\text{A}$	N		10		nC
			P		15		
$Q_{gs}$	Gate-Source Charge		N		1.6		
			P		2.5		
$Q_{gd}$	Gate-Drain Charge		N		3.4		
			P		3.5		

- Notes:
- ① Pulse width limited by safe operating area.
  - ② Calculated continuous current based on maximum allowable junction temperature.
  - ③ When mounted on 1 inch square copper board,  $t \leq 10\text{sec}$ . The value in any given application depends on the user's specific board design.
  - ④ Limited by  $T_{Jmax}$ . Starting  $T_J = 25^{\circ}\text{C}$ .
  - ⑤ Pulse test; Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
  - ⑥ Guaranteed by design, not subject to production testing.

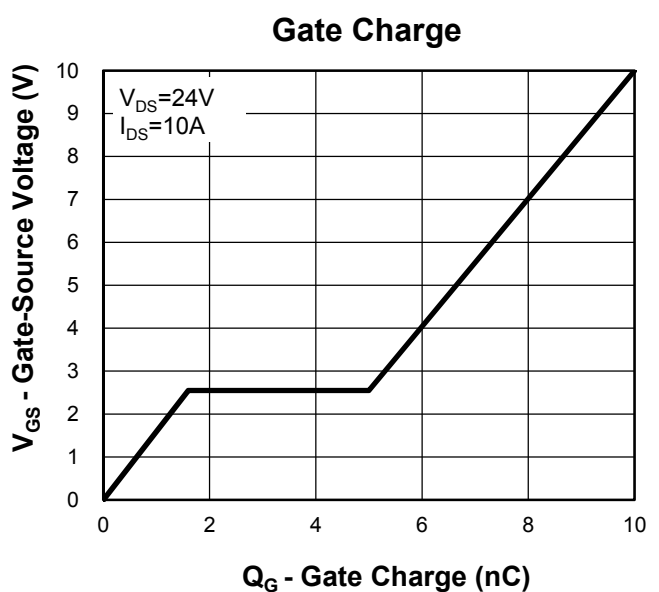
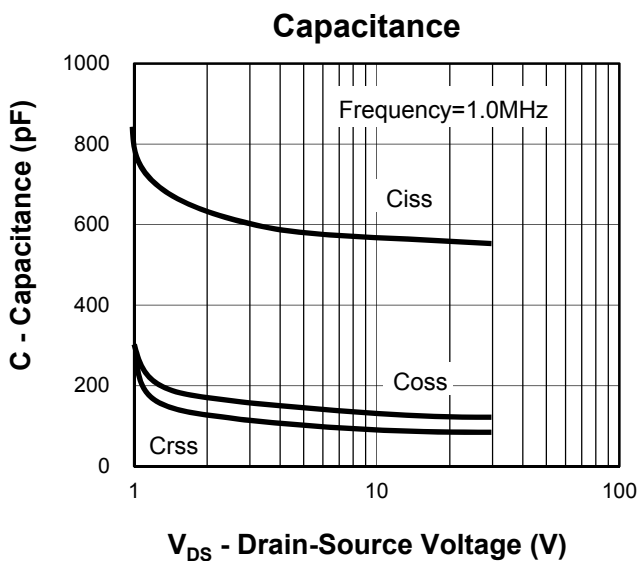
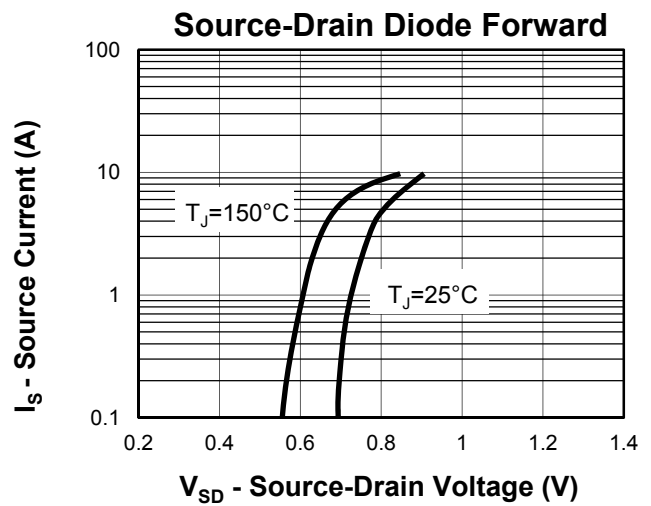
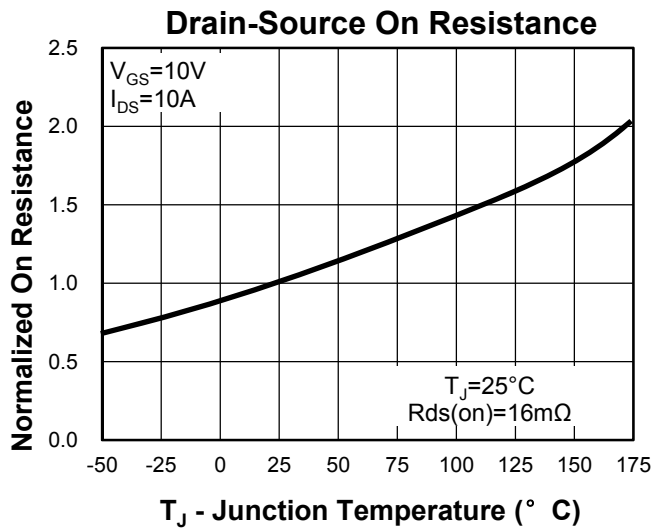
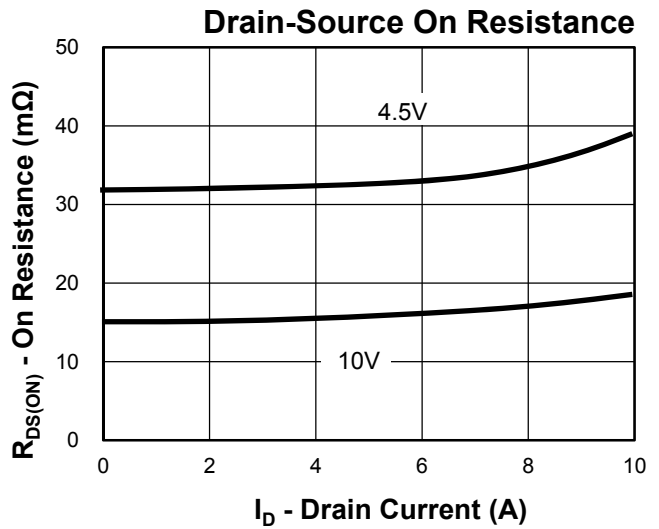
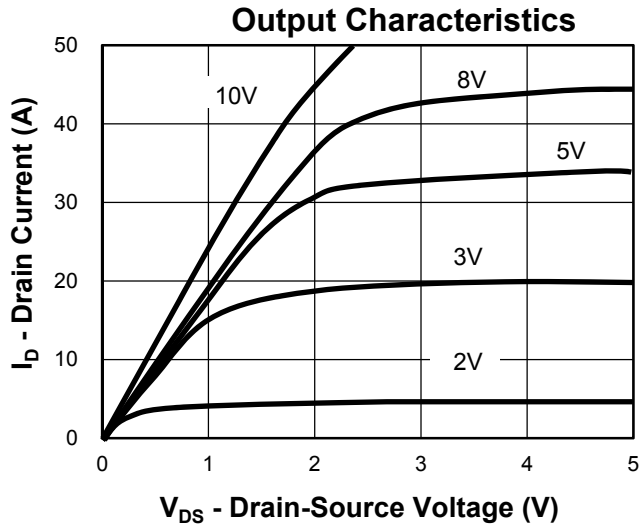
**Ordering and Marking Information**

<b>Device</b>	<b>Marking</b>	<b>Package</b>	<b>Packaging</b>	<b>Quantity</b>	<b>Reel Size</b>	<b>Tape width</b>
RU30C10H	RU30C10H	SOP-8	Tape&Reel	2500	13"	12mm

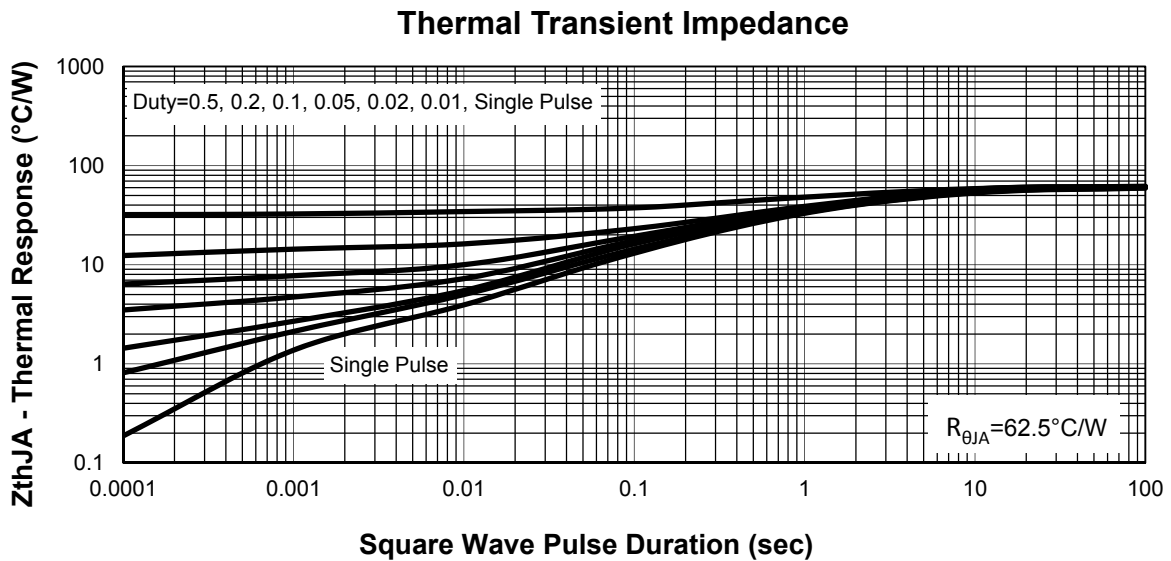
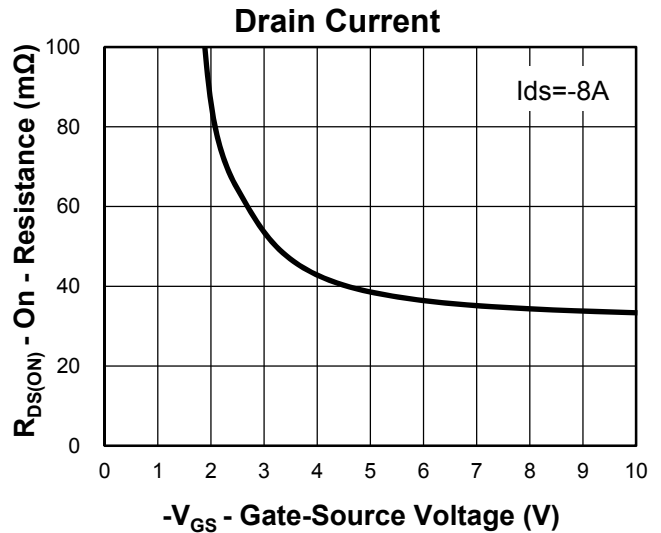
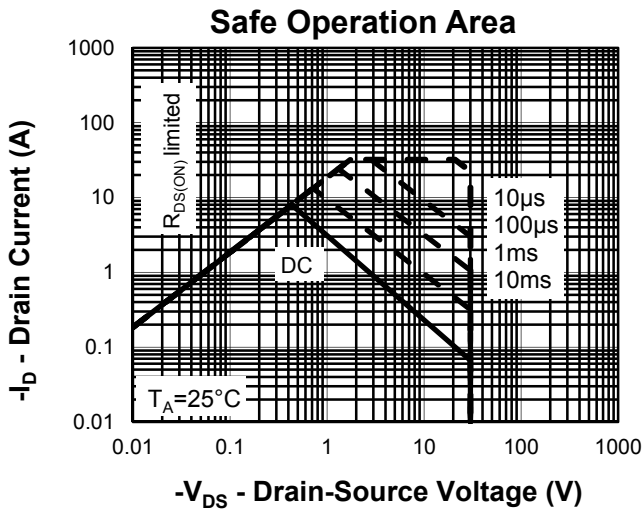
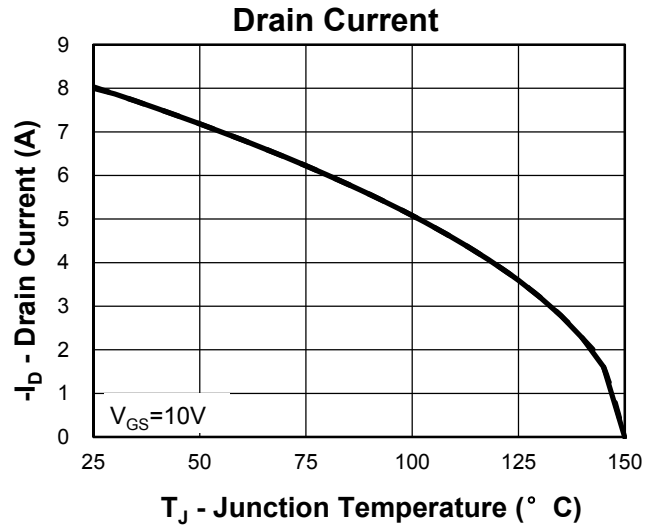
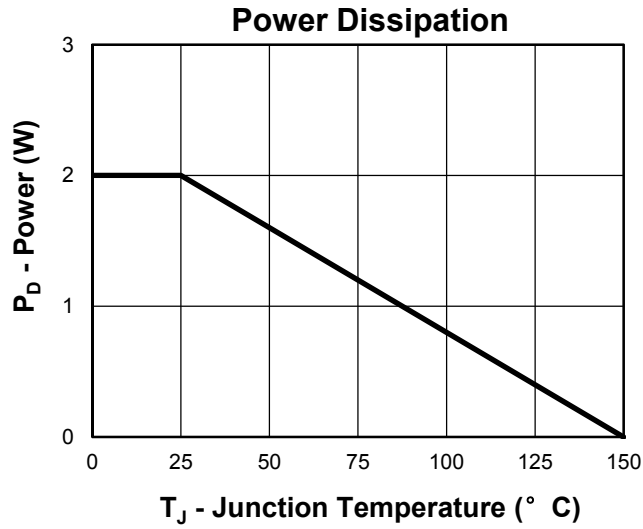
**Typical Characteristics(N-Channel)**



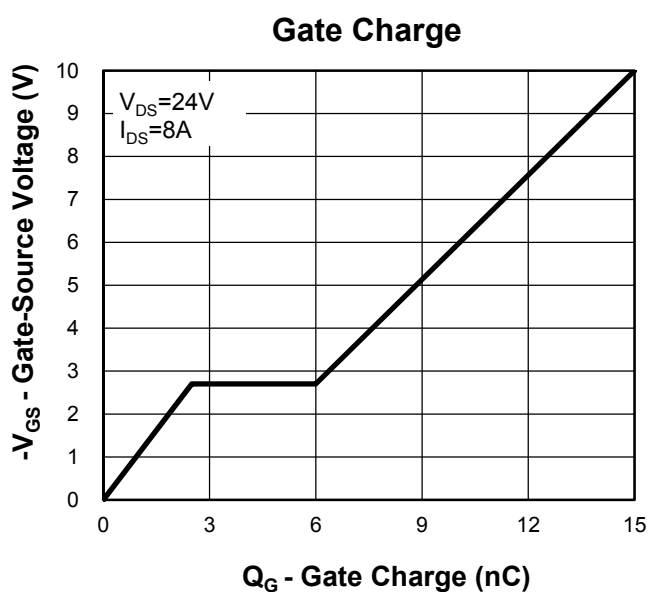
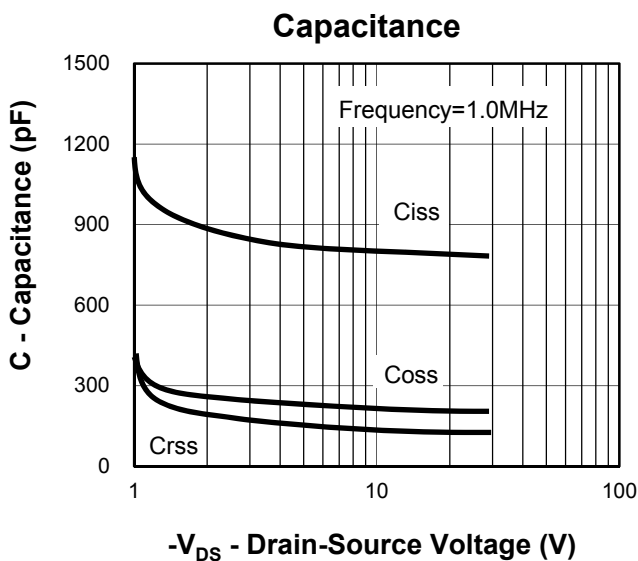
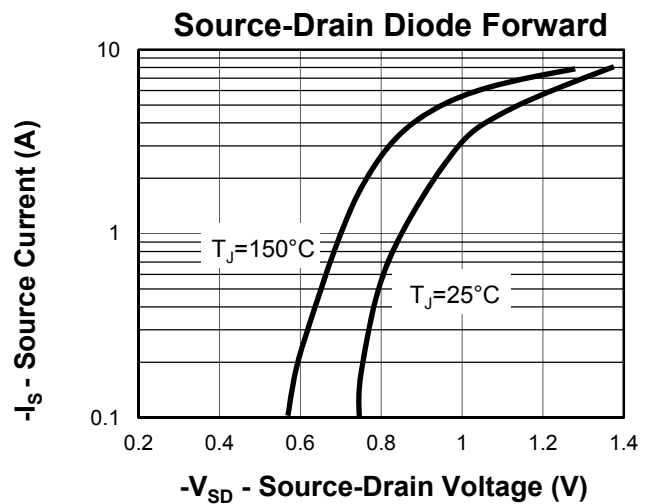
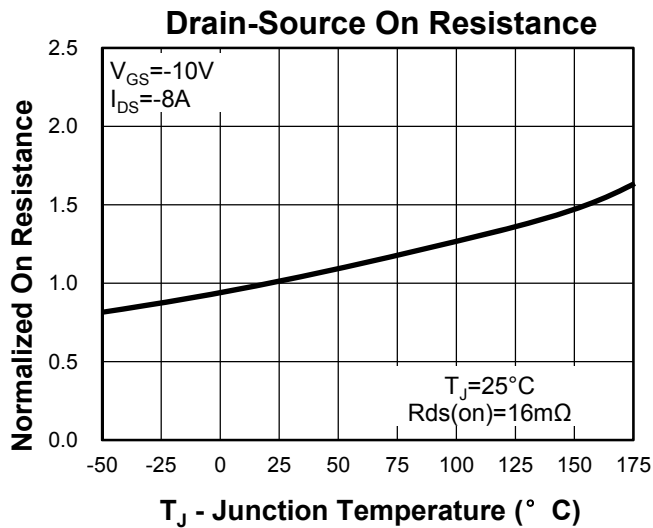
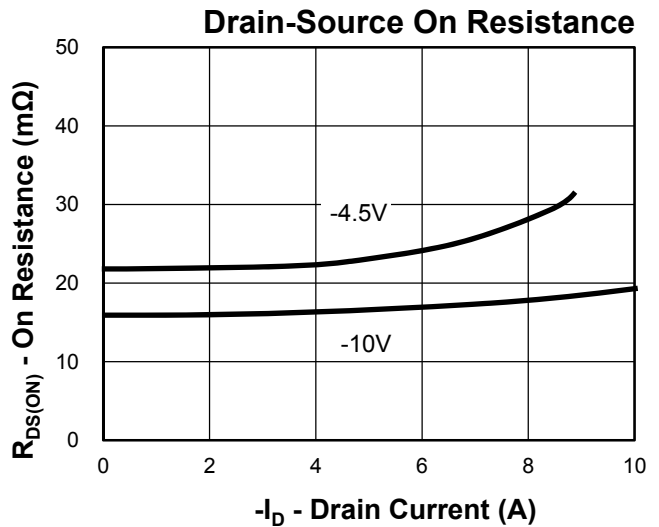
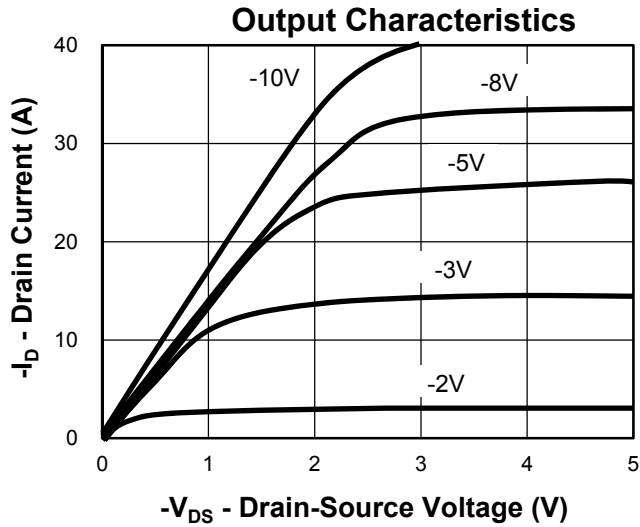
**Typical Characteristics(N-Channel)**



**Typical Characteristics(P-Channel)**



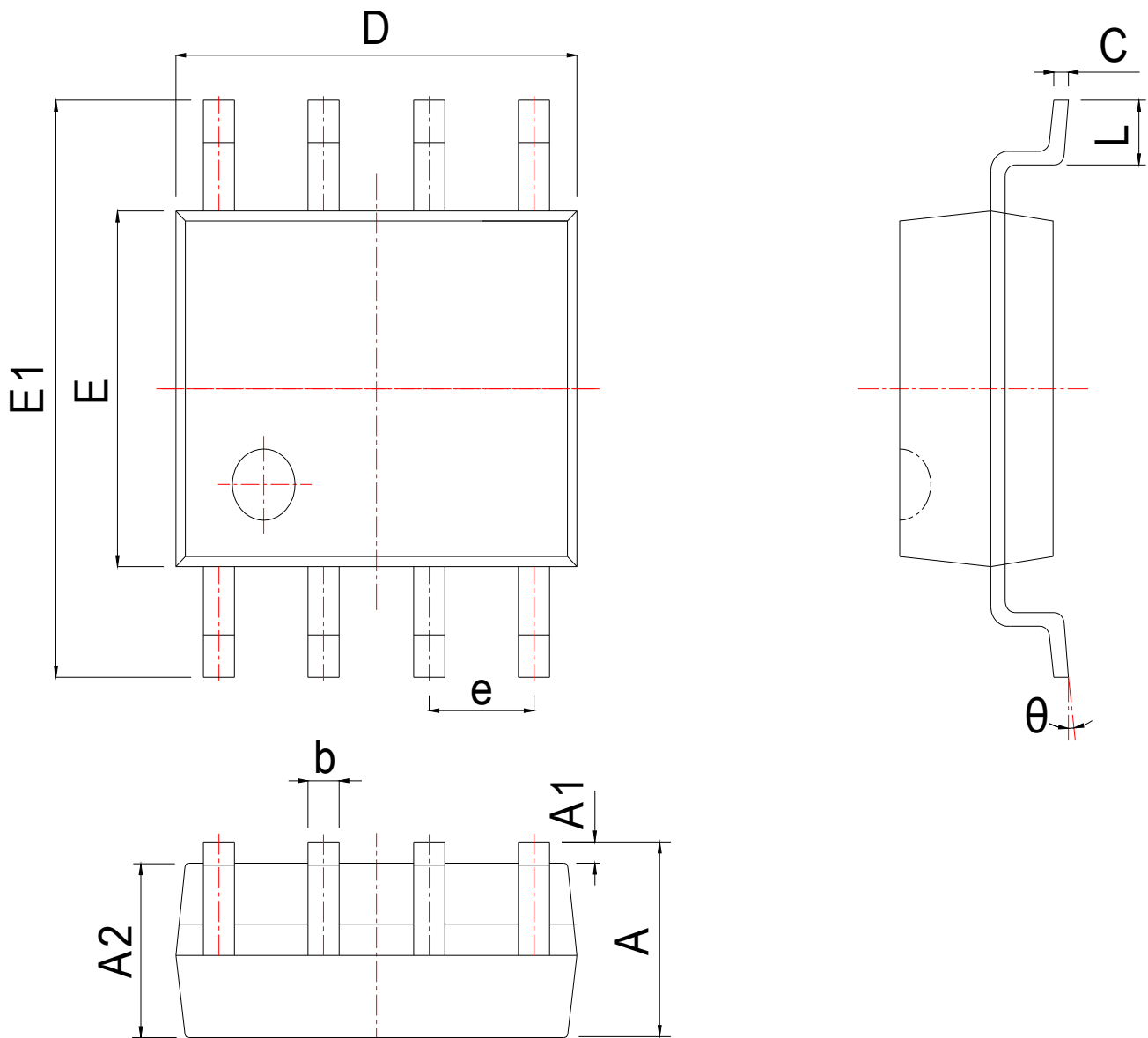
**Typical Characteristics(P-Channel)**





**Package Information**

**SOP-8**



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.300	1.525	1.750	0.051	0.060	0.069
A1	0.050	0.150	0.250	0.002	0.006	0.010
A2	1.350	1.450	1.550	0.053	0.057	0.061
b	0.330	0.420	0.510	0.013	0.017	0.020
c	0.170	0.210	0.250	0.007	0.008	0.010
D	4.700	4.900	5.100	0.185	0.193	0.201
E	3.800	3.900	4.000	0.150	0.154	0.157
E1	5.800	6.000	6.200	0.228	0.236	0.244
e	1.270 BSC			0.050 BSC		
L	0.400	0.835	1.270	0.016	0.033	0.050
$\theta$	0°		8°	0°		8°

**Customer Service****Worldwide Sales and Service:**

Sales@ruichips.com

**Technical Support:**

Technical@ruichips.com

**Investor Relations Contacts:**

Investor@ruichips.com

**Marcom Contact:**

Marcom@ruichips.com

**Editorial Contact:**

Editorial@ruichips.com

**HR Contact:**

HR@ruichips.com

**Legal Contact:**

Legal@ruichips.com

**Shen Zhen RUICHIPS Semiconductor CO., LTD**

4th Floor, Block 8, Changyuan New Material Port, Keyuan Middle Road, Science & Industry Park,  
Nanshan District, Shenzhen, CHINA

**TEL:** (86-755) 8311-5334

**FAX:** (86-755) 8311-4278

**E-mail:** Sales-SZ@ruichips.com