

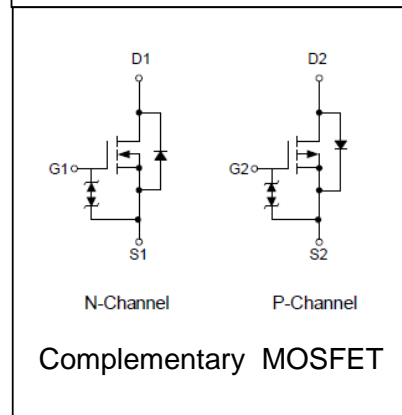
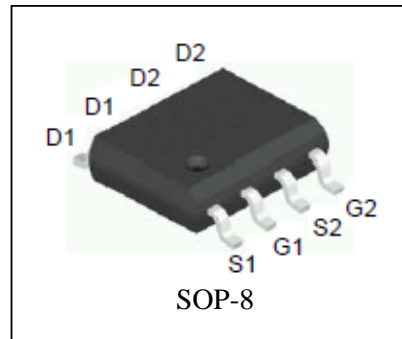
## Features

- N-Channel  
100V/3.5A,  
 $R_{DS(ON)} = 75m\Omega$  (Type) @  $V_{GS} = 10V$   
 $R_{DS(ON)} = 80m\Omega$  (Type) @  $V_{GS} = 4.5V$
- P-Channel  
-100V/-2.5A,  
 $R_{DS(ON)} = 155m\Omega$  (Type) @  $V_{GS} = -10V$   
 $R_{DS(ON)} = 175m\Omega$  (Type) @  $V_{GS} = -4.5V$
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Available

## Applications

- Power Management in Notebook Computer.

## 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	100	-100	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	$\pm 20$		
$T_J$	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 $T_C = 25^\circ C$	3.5	-2.5	A	
<b>Mounted on Large Heat Sink</b>					
$I_{DP}$	300 $\mu s$ Pulse Drain Current Tested $T_C = 25^\circ C$	14 <sup>①</sup>	-10 <sup>①</sup>	A	
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	3.5	-2.5	A
		$T_C = 70^\circ C$	2.9	-2	
$P_D$	Maximum Power Dissipation	$T_C = 25^\circ C$	2	W	
		$T_C = 70^\circ C$	1.3		
$R_{\theta JA}$ <sup>②</sup>	Thermal Resistance-Junction to Ambient	62.5		$^\circ C/W$	

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

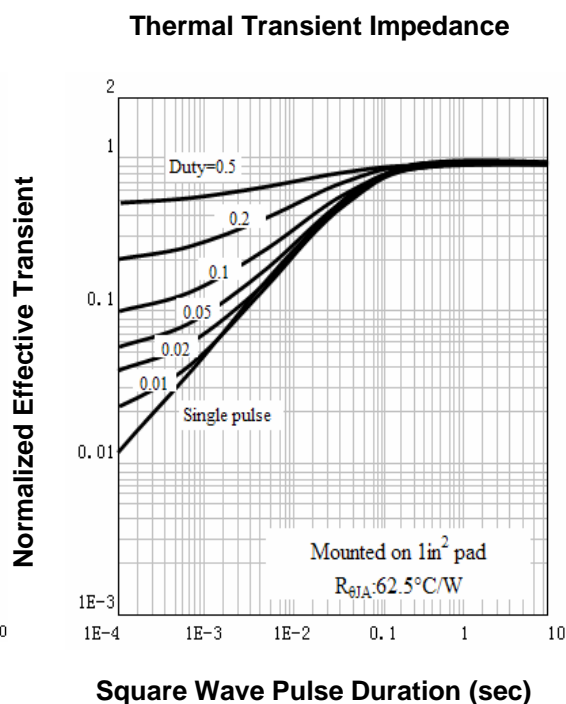
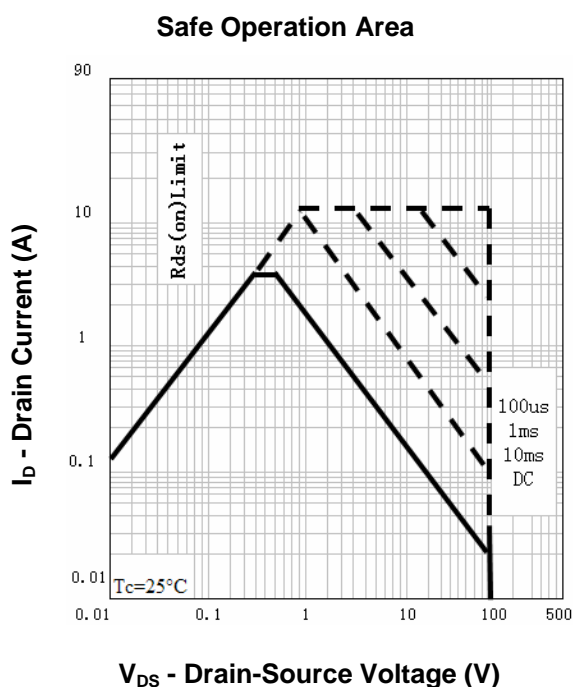
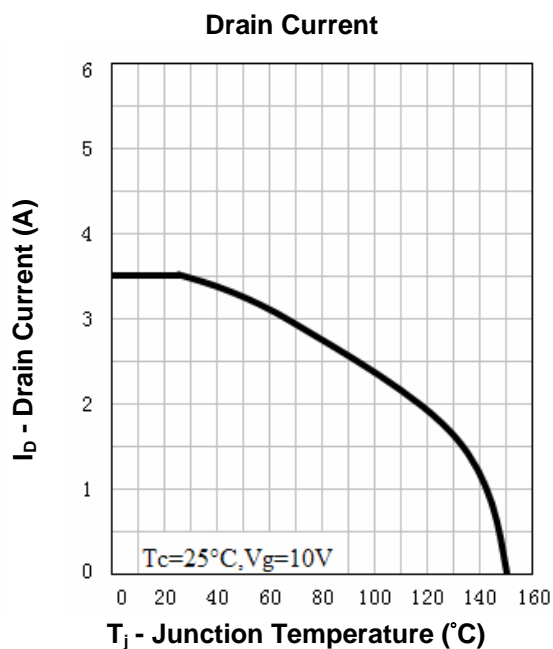
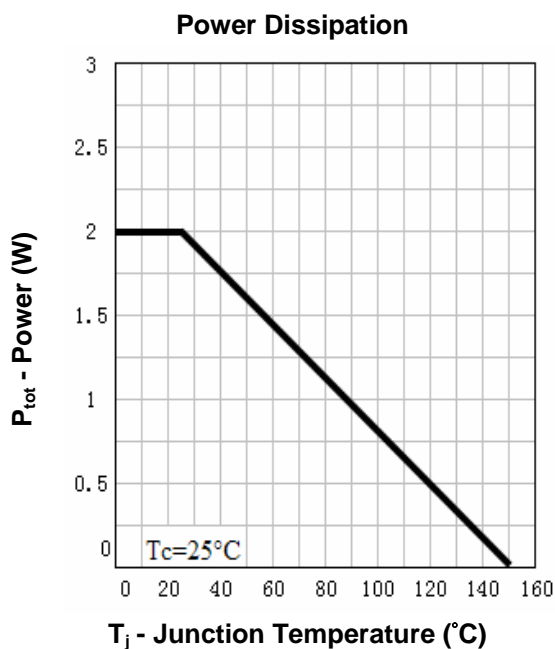
Symbol	Parameter	Test Condition	RU1HC2H			Unit	
			Min.	Typ.	Max.		
<b>Static Characteristics</b>							
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	N	100			V
		$V_{GS}=0V, I_{DS}=-250\mu A$	P	-100			
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	N			1	$\mu A$
		$T_J=85^\circ C$				30	
		$V_{DS}=-100V, V_{GS}=0V$	P			-1	
		$T_J=85^\circ C$				-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	N	1.5	2	2.7	V
		$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	P	-1.5	-2	-2.7	
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	N			$\pm 10$	$\mu A$
		$V_{GS}=\pm 20V, V_{DS}=0V$	P			$\pm 10$	$\mu A$
$R_{DS(ON)}^{(3)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=2A$	N		75	85	$m\Omega$
		$V_{GS}=4.5V, I_{DS}=1.5A$			80	95	
		$V_{GS}=-10V, I_{DS}=-2A$	P		155	170	
		$V_{GS}=-4.5V, I_{DS}=-1.5A$			175	195	
<b>Diode Characteristics</b>							
$V_{SD}^{(3)}$	Diode Forward Voltage	$I_{SD}=1A, V_{GS}=0V$	N			1.2	V
		$I_{SD}=-1A, V_{GS}=0V$	P			-1.2	V
$t_{rr}$	Reverse Recovery Time	N-Channel $I_{SD}=3.5A,$ $dI_{SD}/dt=100A/\mu s$	N		42		ns
			P		52		
$Q_{rr}$	Reverse Recovery Charge	P-Channel $I_{SD}=-2.5A,$ $dI_{SD}/dt=100A/\mu s$	N		43		nC
			P		75		

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

<b>Dynamic Characteristics</b> <sup>④</sup>						
$C_{iss}$	Input Capacitance	N-Channel $V_{GS}=0V,$ $V_{DS}=50V,$ Frequency=1.0MHz	N	1520		pF
			P	1630		
$C_{oss}$	Output Capacitance	P-Channel $V_{GS}=0V,$ $V_{DS}=-50V,$ Frequency=1.0MHz	N	134		
			P	191		
$C_{rss}$	Reverse Transfer Capacitance	N-Channel $V_{GS}=0V,$ $V_{DS}=-50V,$ Frequency=1.0MHz	N	62		
			P	83		
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=50V, R_L=30\Omega,$ $I_{DS}=3.5A, V_{GEN}= 10V,$ $R_G=6\Omega$	N	12		ns
$t_r$	Turn-on Rise Time		P	16		
$t_{d(OFF)}$	Turn-off Delay Time	P-Channel $V_{DD}=-50V, R_L=30\Omega,$ $I_{DS}=-2.5A, V_{GEN}= -10V,$ $R_G=6\Omega$	N	24		
			P	28		
$t_f$	Turn-off Fall Time		N	34		
			P	45		
			N	18		
			P	24		
<b>Gate Charge Characteristics</b> <sup>④</sup>						
$Q_g$	Total Gate Charge	N-Channel $V_{DS}=80V, V_{GS}= 10V,$ $I_{DS}=3.5A$	N	18		nC
			P	23		
$Q_{gs}$	Gate-Source Charge	P-Channel $V_{DS}=-80V, V_{GS}= -10V,$ $I_{DS}=-2.5A$	N	4		
			P	7		
$Q_{gd}$	Gate-Drain Charge		N	5		
			P	6		

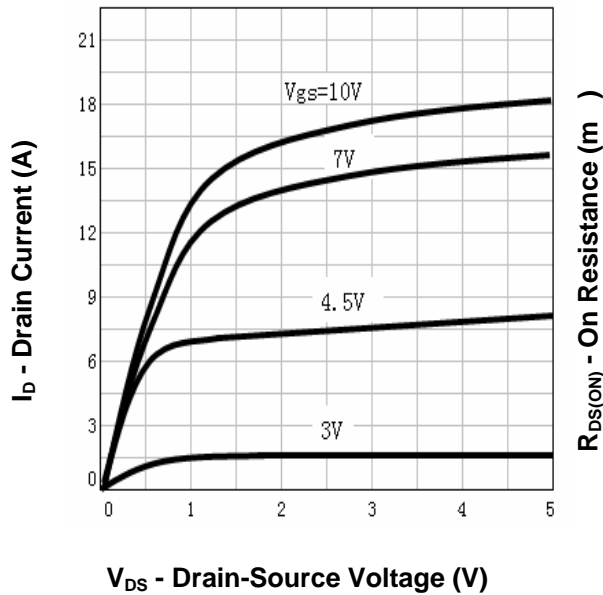
- Notes: ① Pulse width limited by safe operating area.  
 ② When mounted on 1 inch square copper board,  $t \leq 10\text{sec}$ .  
 ③ Pulse test ; Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 ④ Guaranteed by design, not subject to production testing.

**Typical Characteristics (N-Channel)**

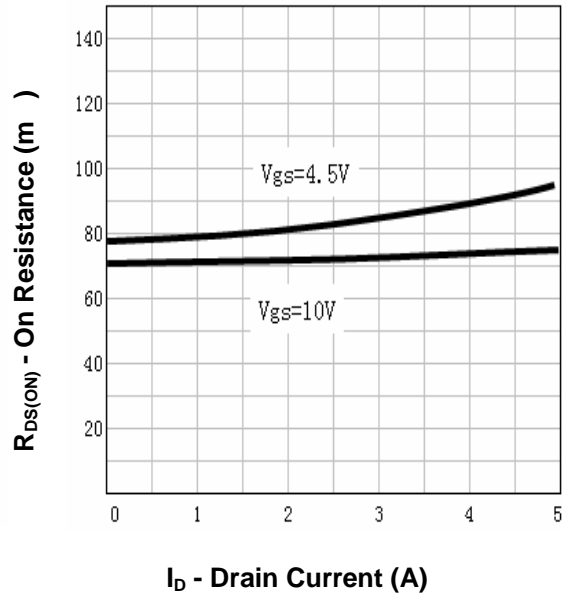


**Typical Characteristics(N-Channel)**

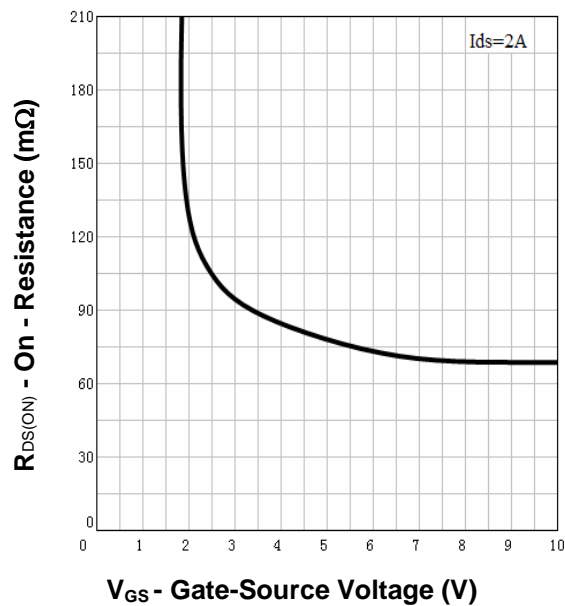
**Output Characteristics**



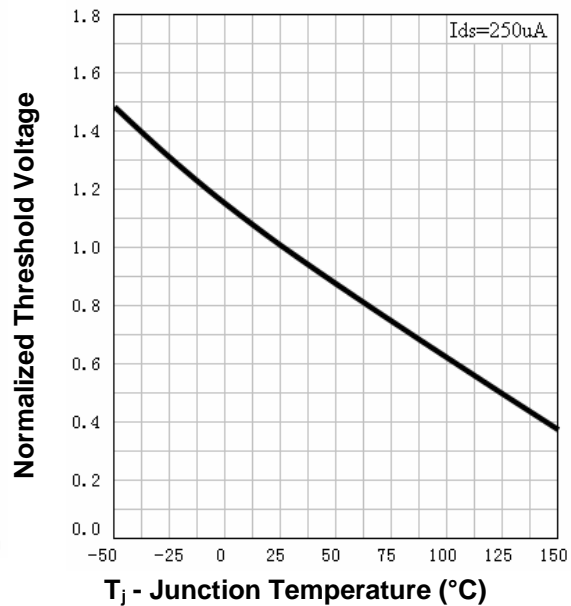
**Drain-Source On Resistance**



**Drain-Source On Resistance**

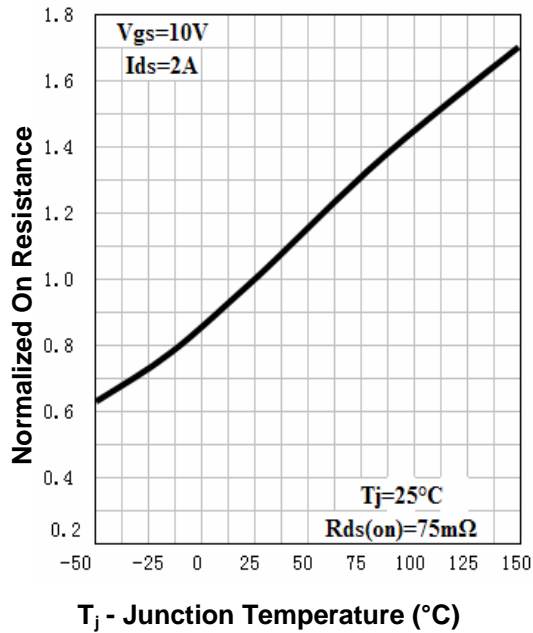


**Gate Threshold Voltage**

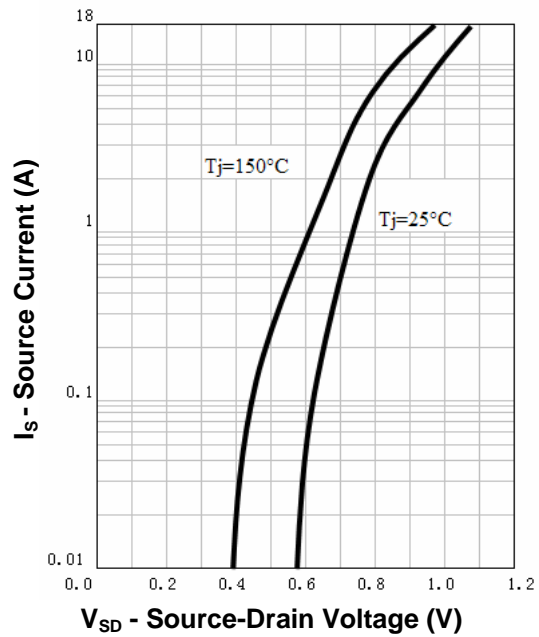


**Typical Characteristics(N-Channel)**

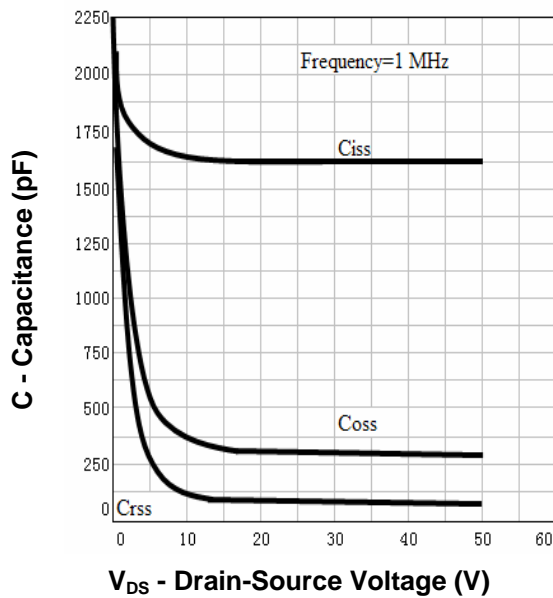
**Drain-Source On Resistance**



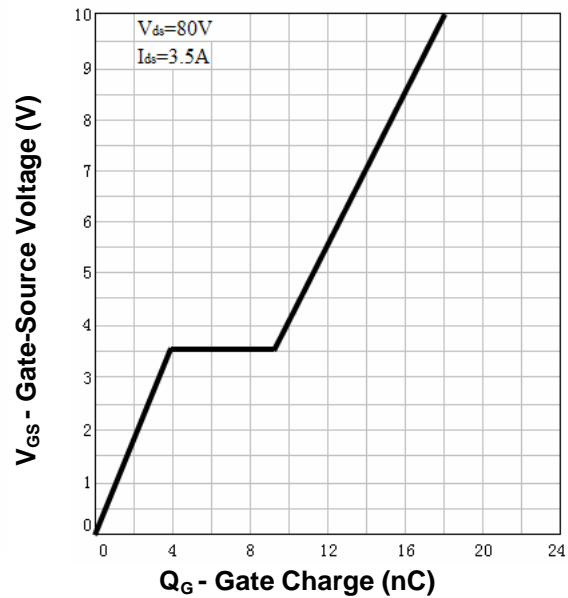
**Source-Drain Diode Forward**



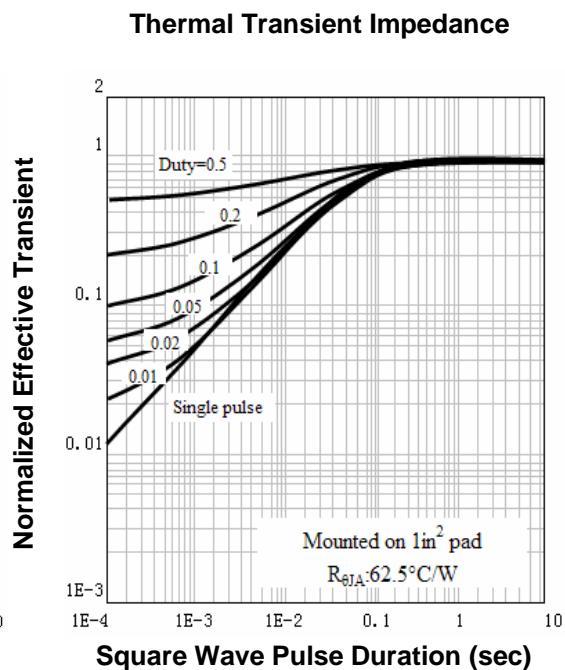
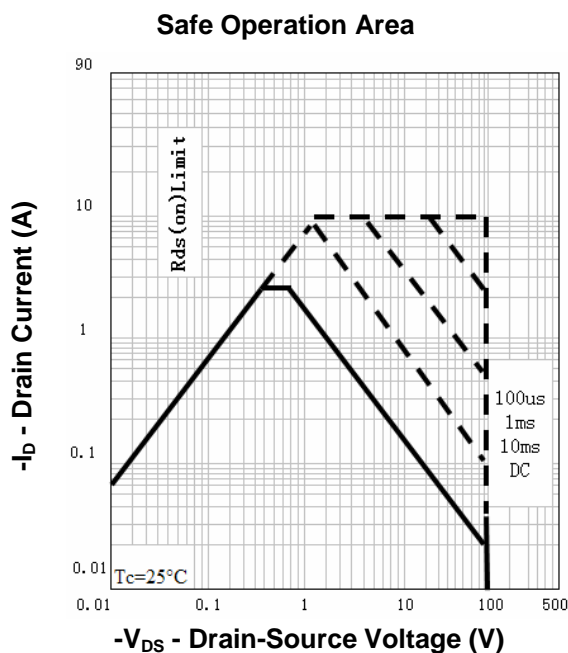
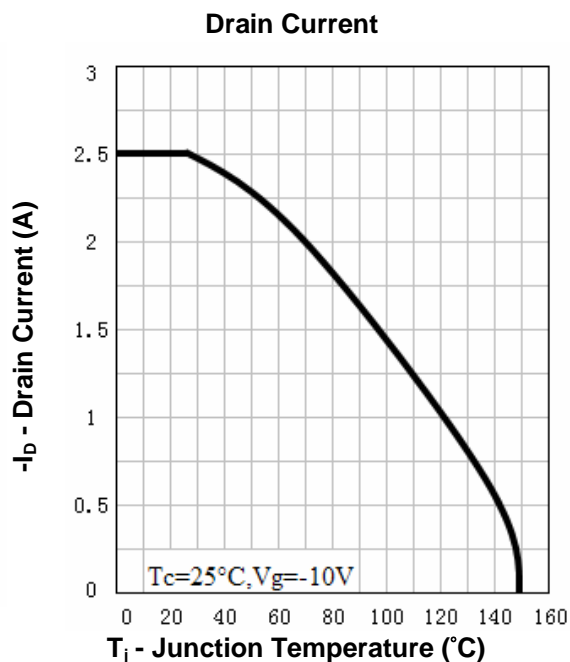
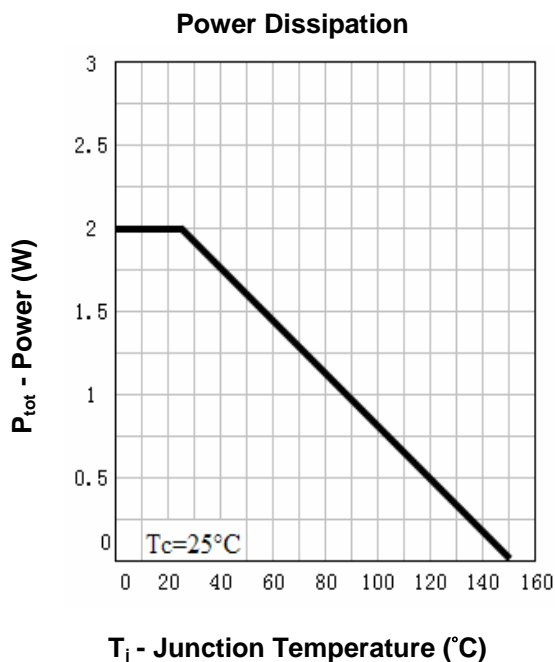
**Capacitance**



**Gate Charge**

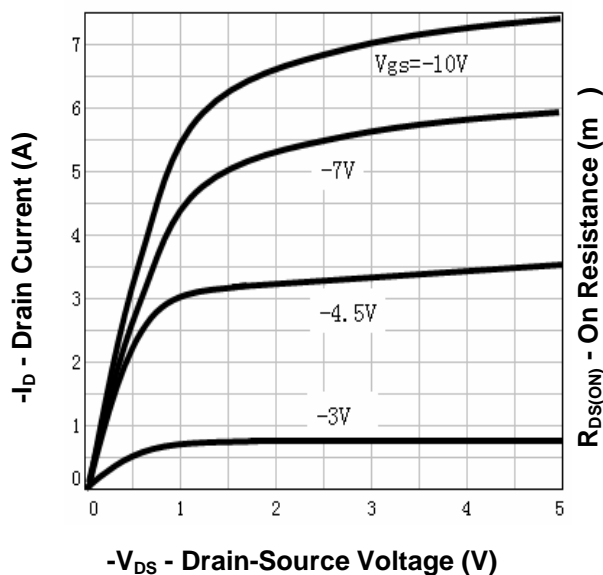


**Typical Characteristics(P-Channel)**

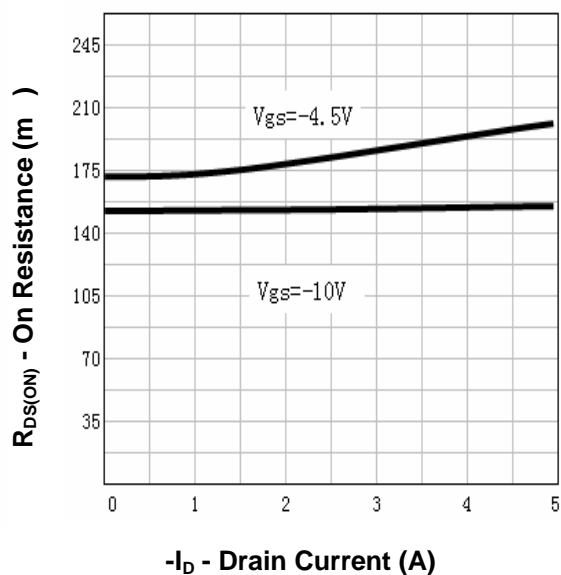


**Typical Characteristics(P-Channel)**

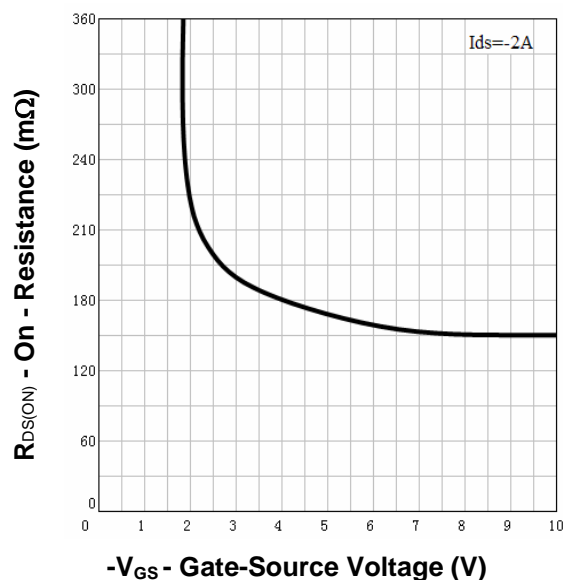
**Output Characteristics**



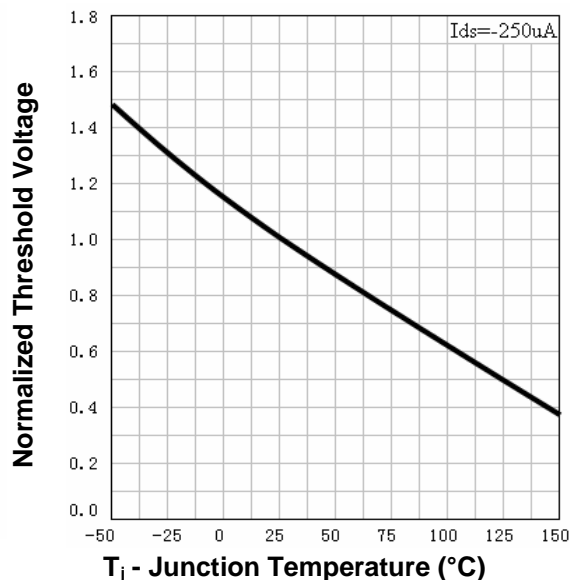
**Drain-Source On Resistance**



**Drain-Source On Resistance**



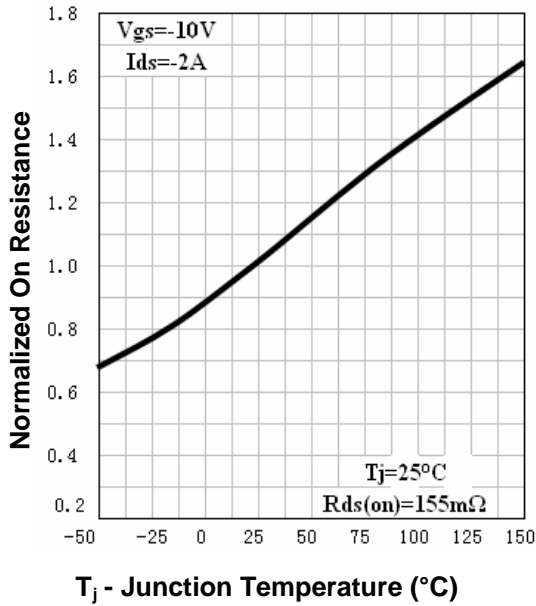
**Gate Threshold Voltage**



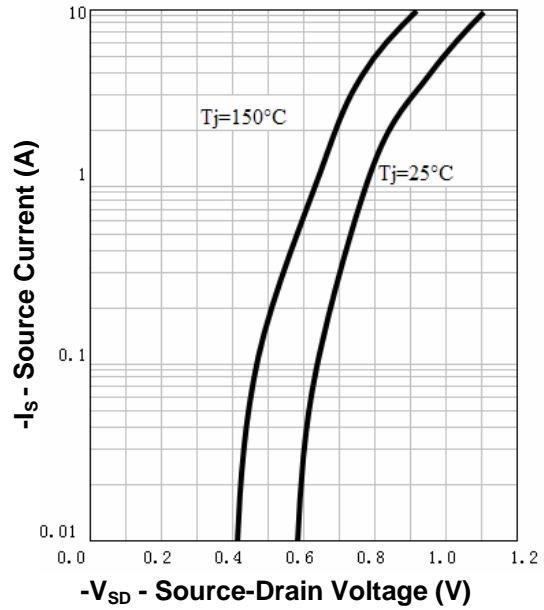


**Typical Characteristics(P-Channel)**

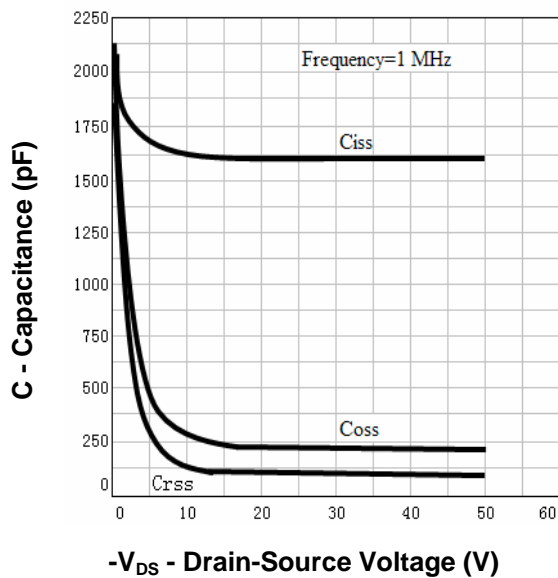
**Drain-Source On Resistance**



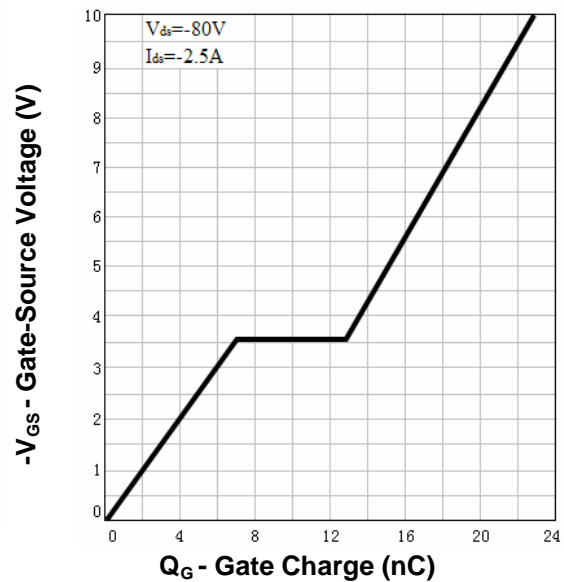
**Source-Drain Diode Forward**



**Capacitance**



**Gate Charge**



**Ordering and Marking Information****RU1HC2****Package (Available)**

H : SOP-8

**Operating Temperature Range**

C : -55 to 150 °C

**Assembly Material**

G : Green &amp; Lead Free

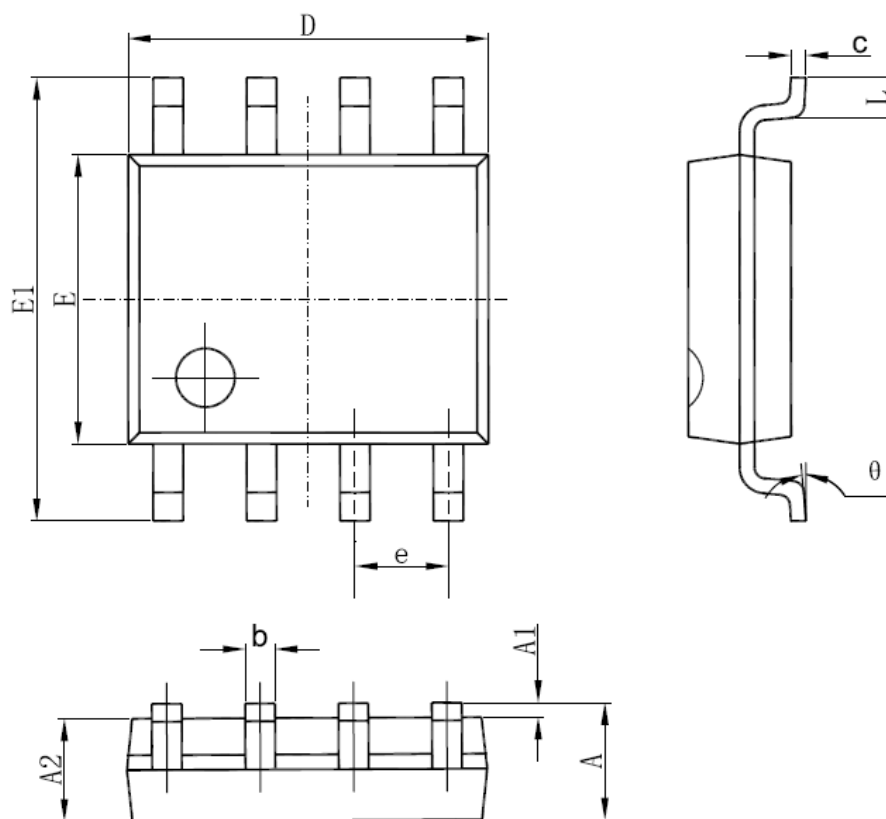
**Packaging**

T : TUBE

TR : Tape &amp; Reel

**Package Information**

**SOP-8**



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	1.350	1.750	0.053	0.069	E	3.800	4.000	0.150	0.157
A1	0.100	0.250	0.004	0.010	E1	5.800	6.200	0.228	0.244
A2	1.350	1.550	0.053	0.061	e	1.270 (BSC)		0.050 (BSC)	
b	0.330	0.510	0.013	0.020	L	0.400	1.270	0.016	0.050
c	0.170	0.250	0.006	0.010	$\theta$	0°	8°	0°	8°
D	4.700	5.100	0.185	0.200					

ALL DIMENSIONS REFER TO JEDEC STANDARD  
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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