RU1HC2H

Complementary Advanced Power MOSFET

Features

• N-Channel
100V/3.5A,
$R_{DS(ON)}$ =75mΩ (Typ.) @ V_{GS}=10V
$R_{DS(ON)}$ =80mΩ (Typ.) @ V_{GS}=4.5V

• P-Channel
-100V/-2.5A,
$R_{DS(ON)}$ =155mΩ (Typ.) @ V_{GS}=-10V
$R_{DS(ON)}$ =175mΩ (Typ.) @ V_{GS}=-4.5V

• Reliable and Rugged

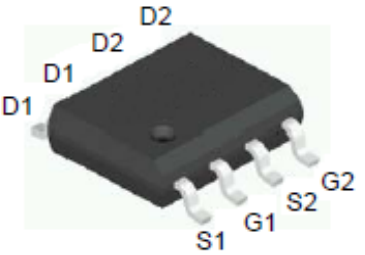
• ESD Protected

• Lead Free and Green Available

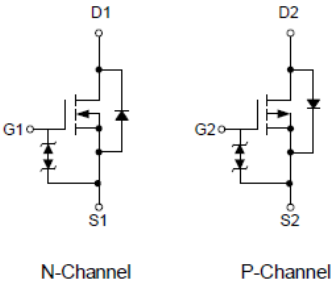
Applications

• Power Management in Notebook Computer.

Pin Description



SOP-8



Complementary MOSFET

Absolute Maximum Ratings

Symbol	Parameter		N -Channel	P Channel	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)					
V_{DSS}	Drain-Source Voltage		100	-100	V
V_{GSS}	Gate-Source Voltage		±20	±20	
T_J	Maximum Junction Temperature		150	150	°C
T_{STG}	Storage Temperature Range		-55 to 150	-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	3.5	-2.5	A
Mounted on Large Heat Sink					
I_{DP}	300μs Pulse Drain Current Tested	T_A=25°C	14①	-10①	A
I_D	Continuous Drain Current (V_{GS}=±10V)	T_A=25°C	3.5	-2.5	A
		T_A=70°C	2.9	-2	
P_D	Maximum Power Dissipation	T_A=25°C	2		W
		T_A=70°C	1.3		
$R_{\theta JA}$②	Thermal Resistance-Junction to Ambient		62.5		°C/W

Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition		RU1HC2H			Unit
				Min.	Typ.	Max.	
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_{DS}=250μA	N	100			V
		V_{GS}=0V,I_{DS}=-250μA	P	-100			
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V	N			1	μA
		T_J=85°C				30	
		V_{DS}=-100V, V_{GS}=0V	P			-1	
		T_J=85°C				-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_{DS}=250μA	N	1.2		2.5	V
		V_{DS}=V_{GS},I_{DS}=-250μA	P	-1.5		-2.7	
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	N			±10	μA
		V_{GS}=±16V, V_{DS}=0V	P			±10	μA
$R_{DS(ON)}$ ③	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=2A	N		75	80	mΩ
		V_{GS}=4.5V, I_{DS}=1.5A			80	85	
		V_{GS}=-10V, I_{DS}=-2A	P		155	160	
		V_{GS}=-4.5V, I_{DS}=-1.5A			175	180	
Diode Characteristics							
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/μs	N		42		ns
			P		52		
Q_{rr}	Reverse Recovery Charge	P-Channel I_{SD}=-2.5A, dI_{SD}/dt=100A/μs	N		43		nC
			P		75		

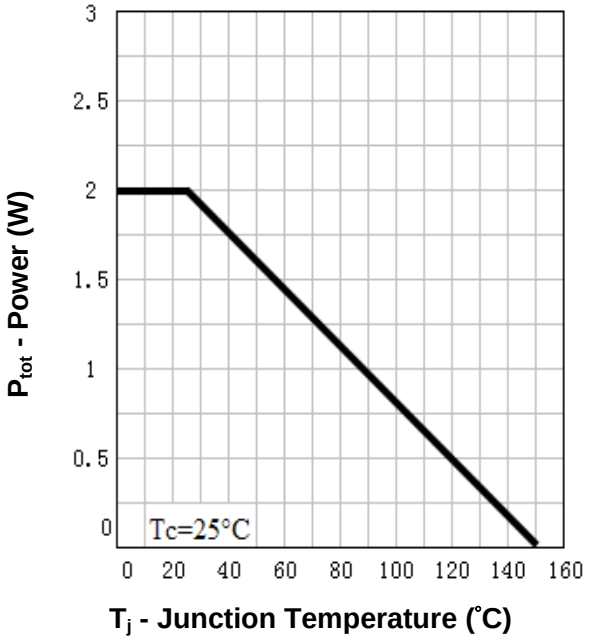
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Dynamic Characteristics④							
C_{iss}	Input Capacitance	N-Channel V_{GS}=0V, V_{DS}=50V, Frequency=1.0MHz P-Channel V_{GS}=0V, V_{DS}=-50V, Frequency=1.0MHz	N		1520		pF
			P		1630		
C_{oss}	Output Capacitance		N		134		
			P		191		
C_{rss}	Reverse Transfer Capacitance		N		62		
			P		83		
$t_{d(ON)}$	Turn-on Delay Time	N-Channel V_{DD}=50V, R_L=30Ω, I_{DS}=3.5A, V_{GEN}= 10V, R_G=6Ω P-Channel V_{DD}=-50V, R_L=30Ω, I_{DS}=-2.5A, V_{GEN}= -10V, R_G=6Ω	N		12		ns
			P		16		
t_r	Turn-on Rise Time		N		24		
			P		28		
$t_{d(OFF)}$	Turn-off Delay Time		N		34		
			P		45		
t_f	Turn-off Fall Time		N		18		
			P		24		
Gate Charge Characteristics④							
Q_g	Total Gate Charge	N-Channel V_{DS}=80V, V_{GS}= 10V, I_{DS}=3.5A P-Channel V_{DS}=-80V, V_{GS}= -10V, I_{DS}=-2.5A	N		18		nC
			P		23		
Q_{gs}	Gate-Source Charge		N		4		
			P		7		
Q_{gd}	Gate-Drain Charge		N		5		
			P		6		

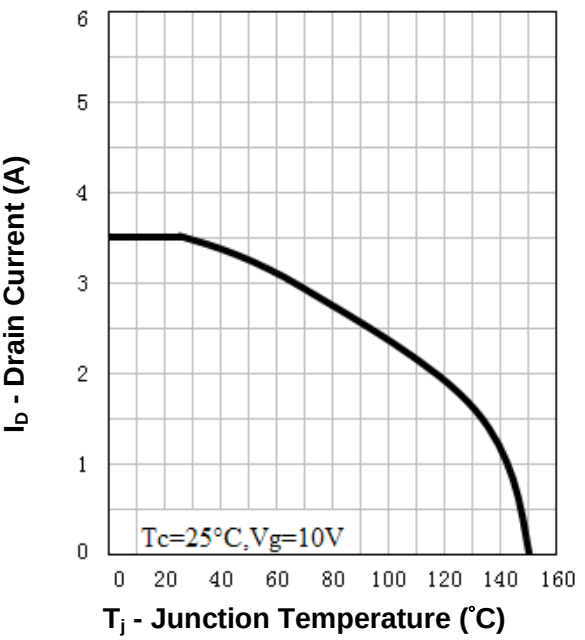
Notes: ①Pulse width limited by safe operating area.
②When mounted on 1 inch square copper board, t ≤10sec.
③Pulse test ; Pulse width≤300μs, duty cycle≤2%.
④Guaranteed by design, not subject to production testing.

Typical Characteristics（N-Channel）

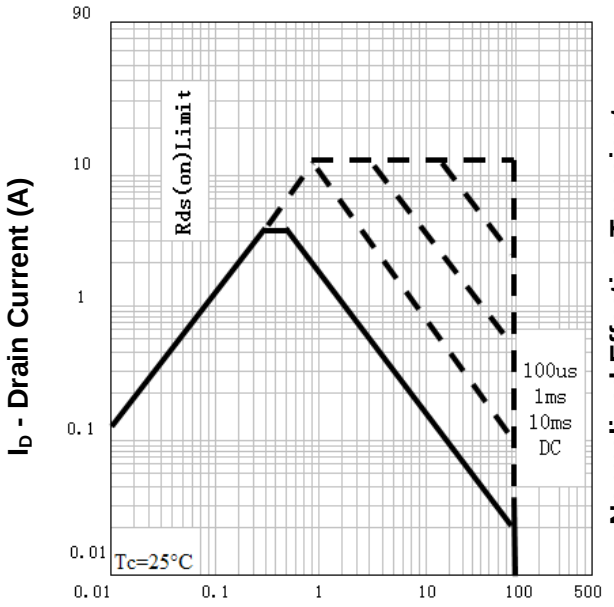
Power Dissipation



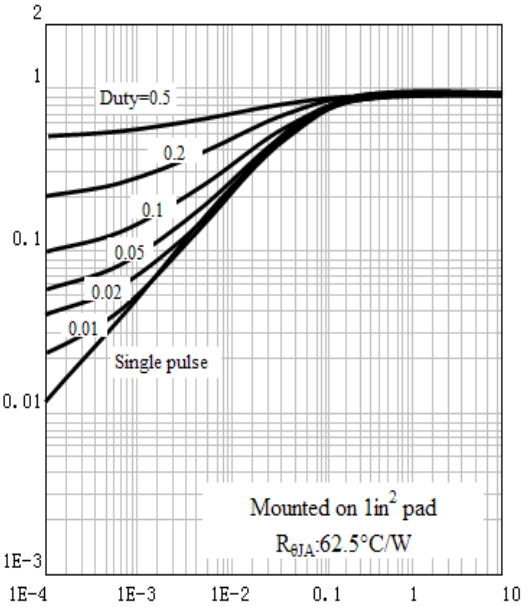
Drain Current



Safe Operation Area

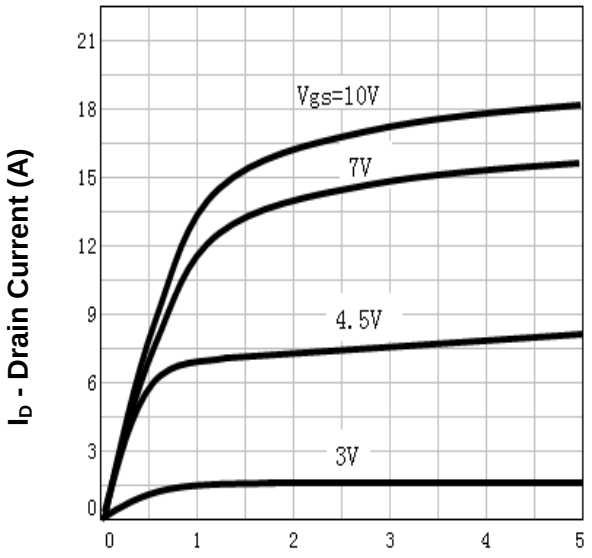


Thermal Transient Impedance

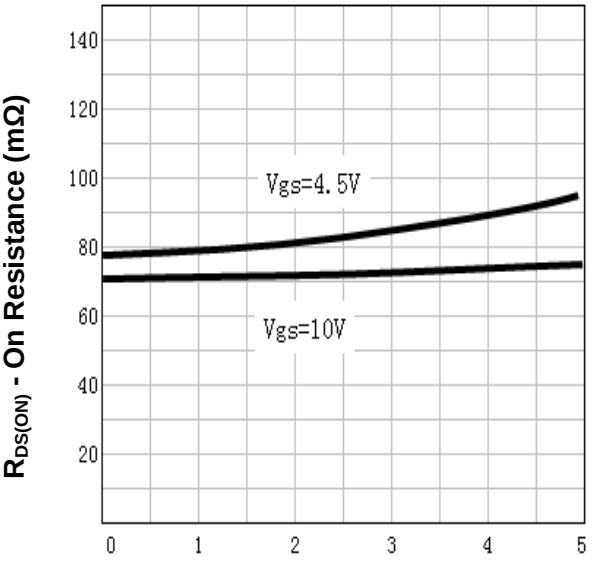


Typical Characteristics(N-Channel)

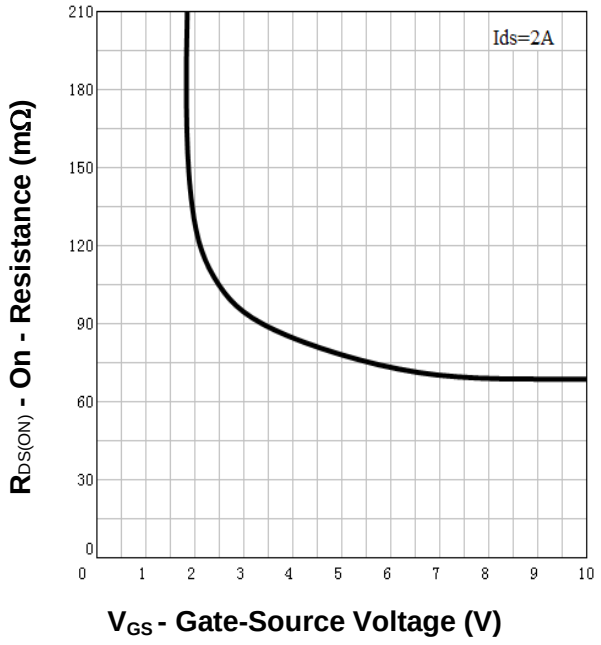
Output Characteristics



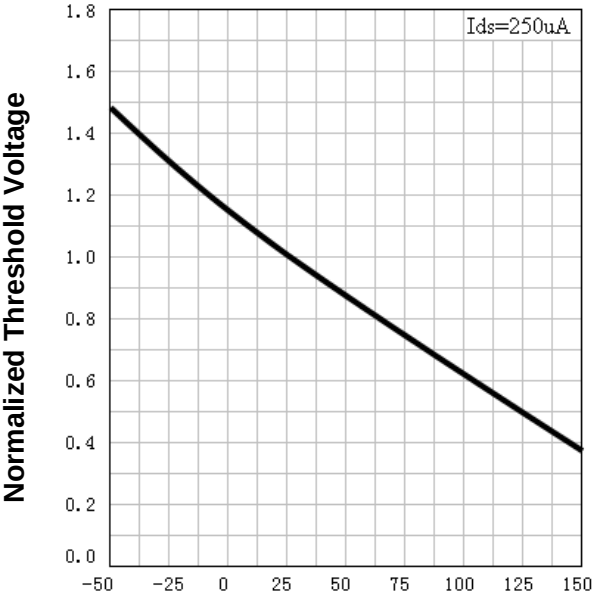
Drain-Source On Resistance



Drain-Source On Resistance

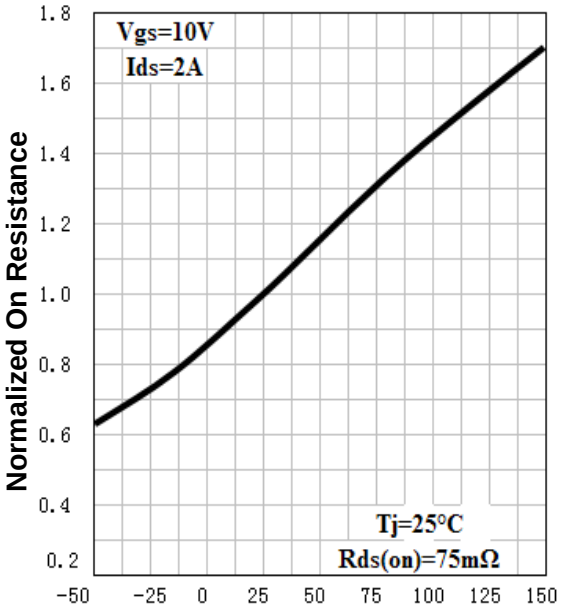


Gate Threshold Voltage



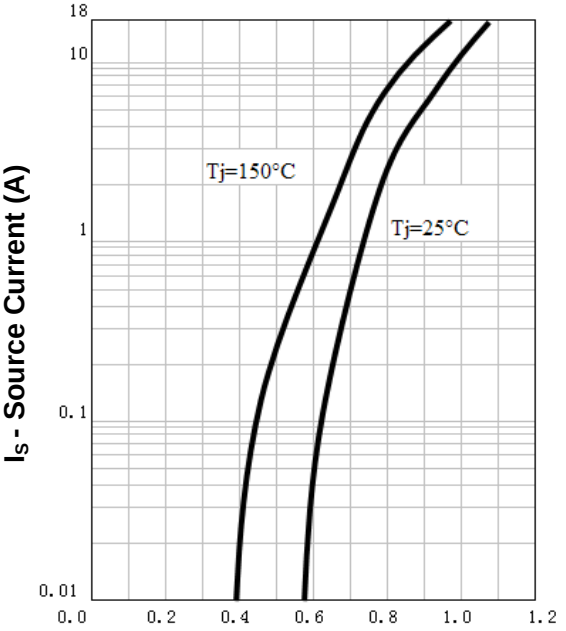
Typical Characteristics(N-Channel)

Drain-Source On Resistance



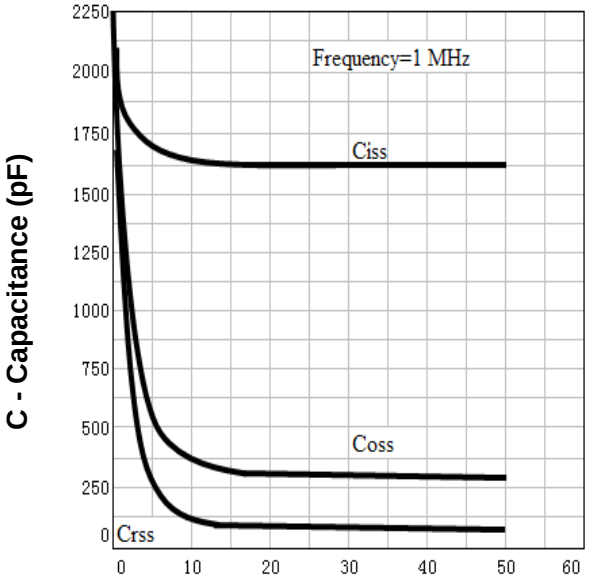
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



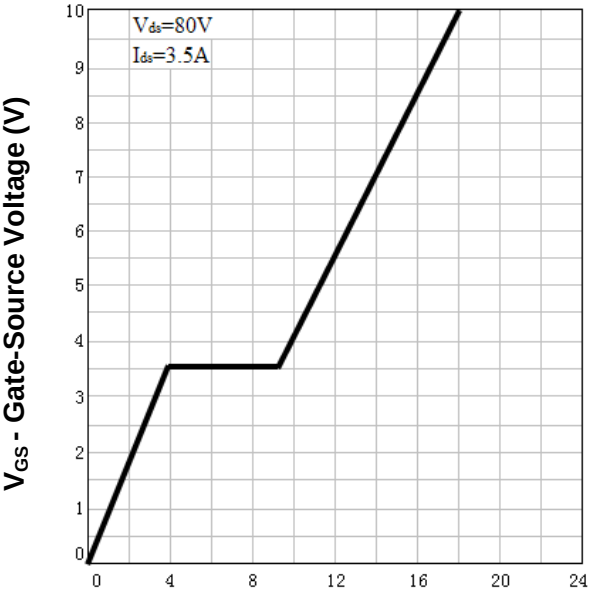
V_{SD} - Source-Drain Voltage (V)

Capacitance



V_{DS} - Drain-Source Voltage (V)

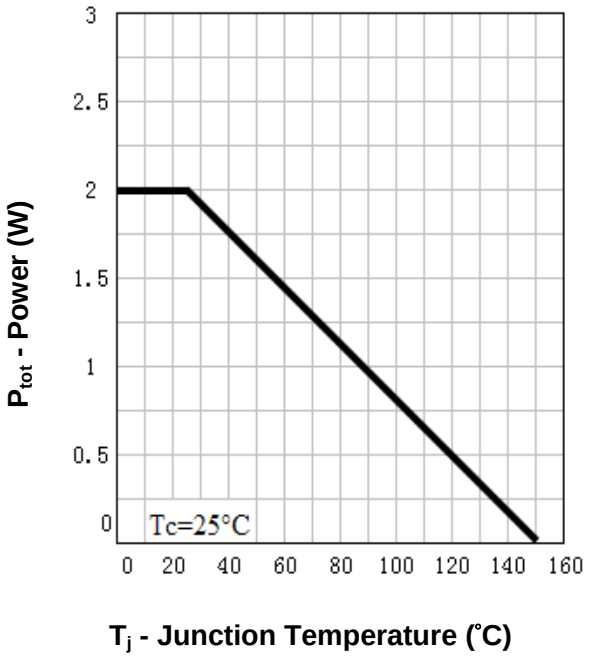
Gate Charge



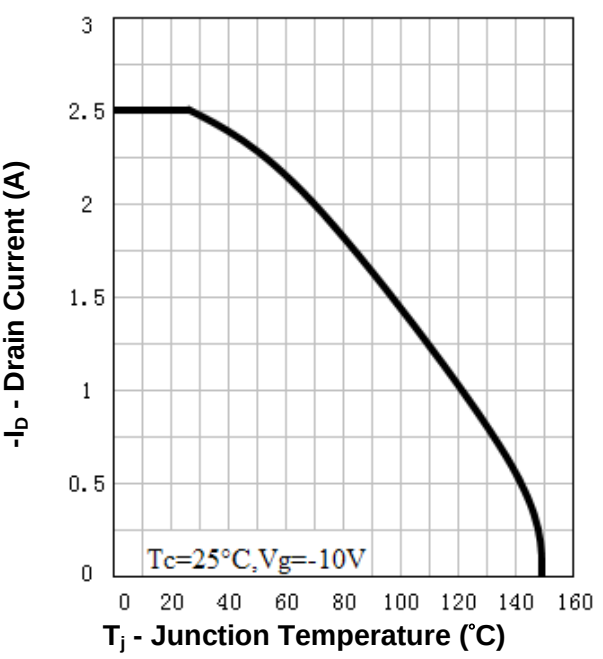
Q_G - Gate Charge (nC)

Typical Characteristics(P-Channel)

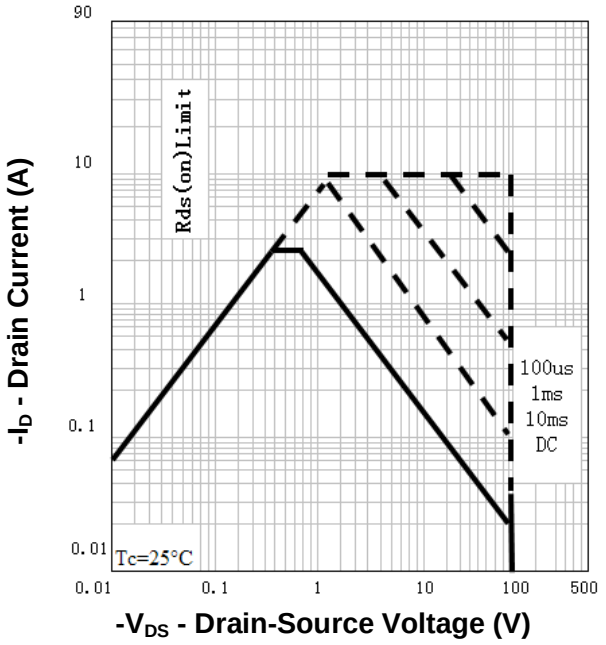
Power Dissipation



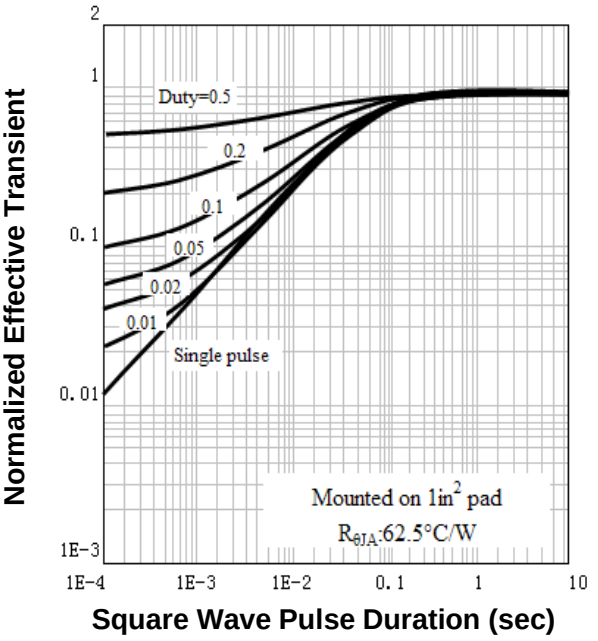
Drain Current



Safe Operation Area

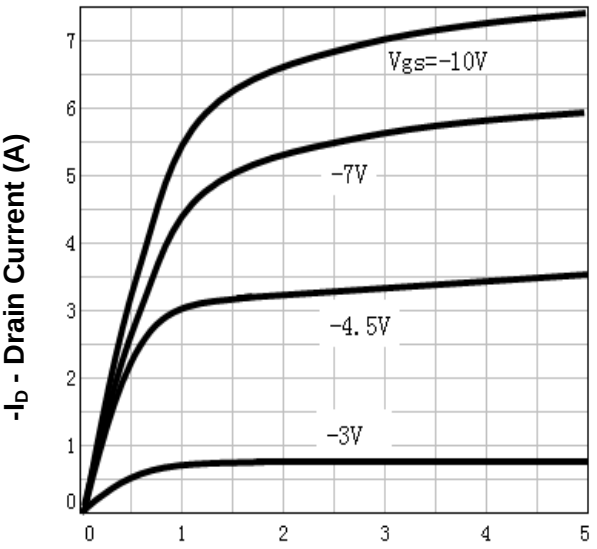


Thermal Transient Impedance

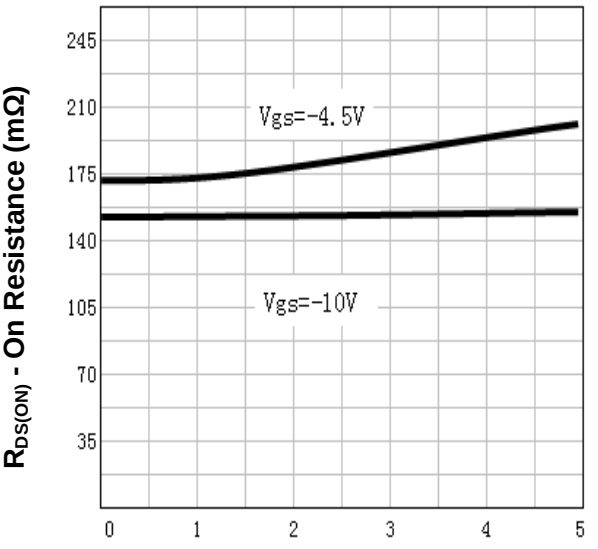


Typical Characteristics(P-Channel)

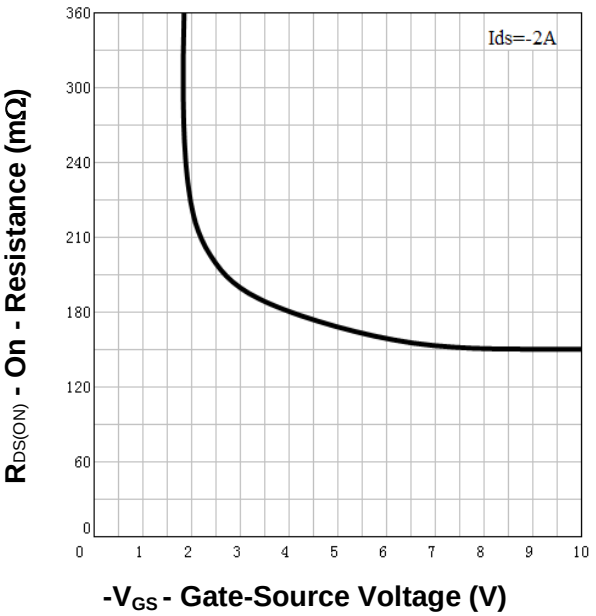
Output Characteristics



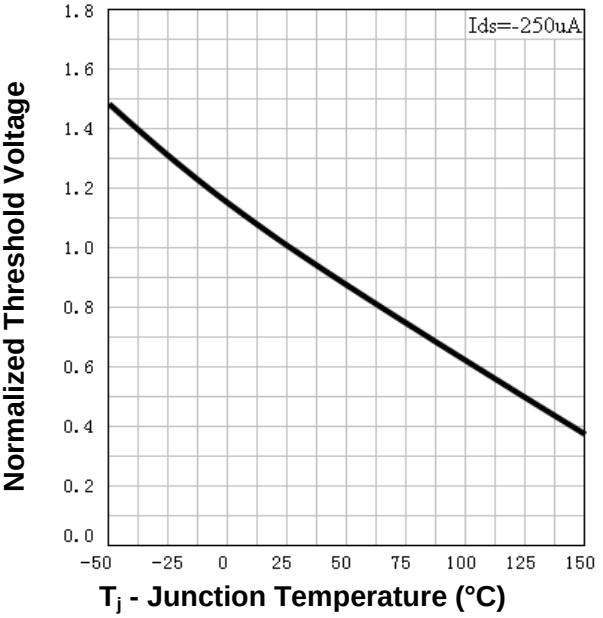
Drain-Source On Resistance



Drain-Source On Resistance

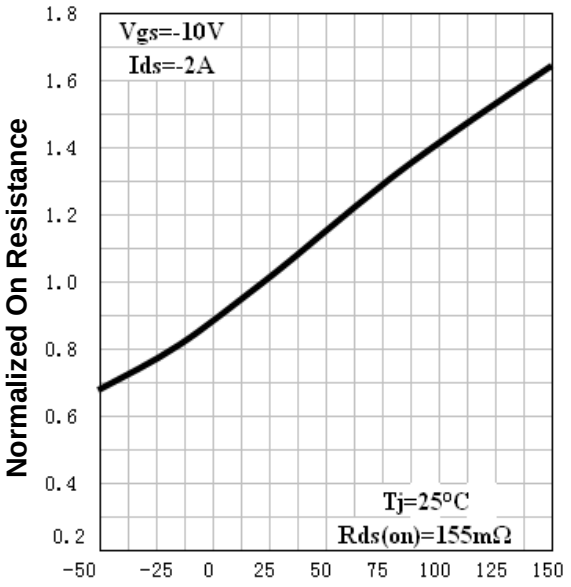


Gate Threshold Voltage



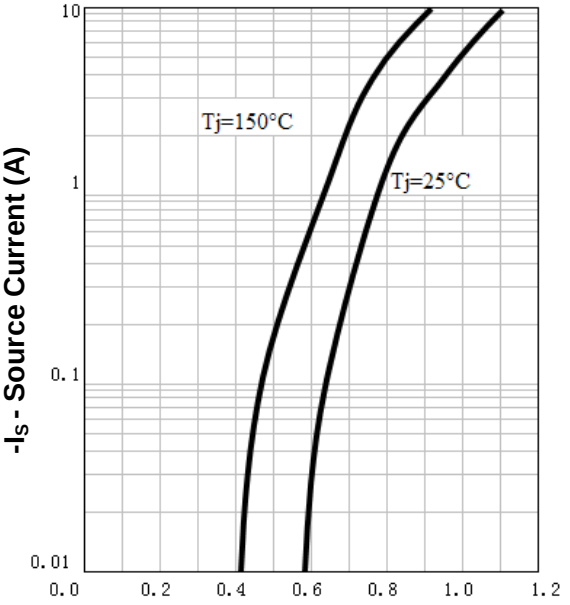
Typical Characteristics(P-Channel)

Drain-Source On Resistance



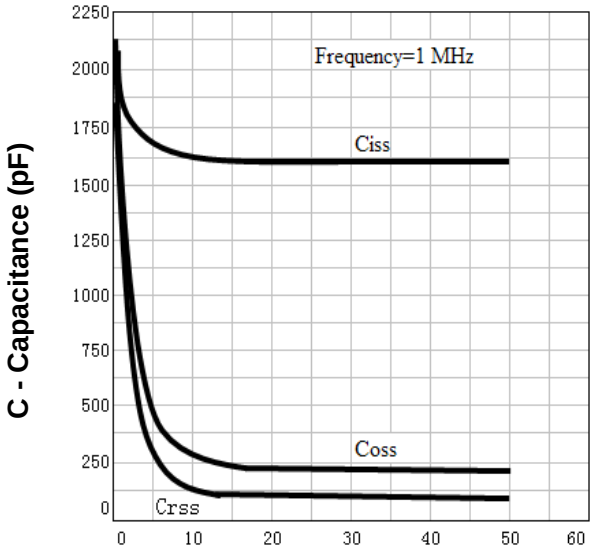
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



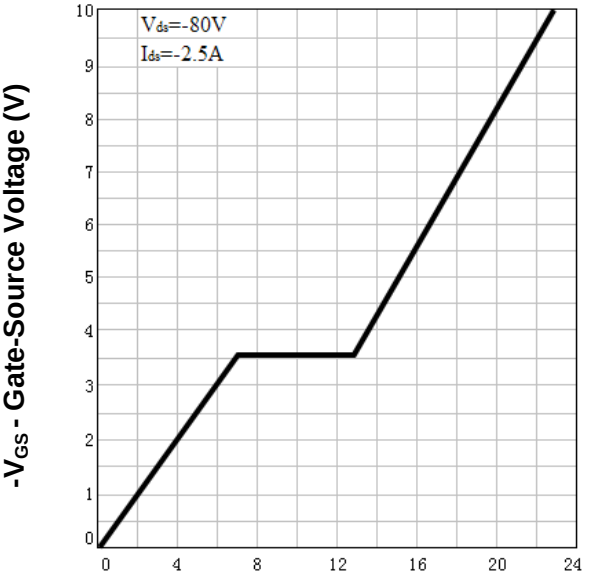
$-V_{SD}$ - Source-Drain Voltage (V)

Capacitance



$-V_{DS}$ - Drain-Source Voltage (V)

Gate Charge



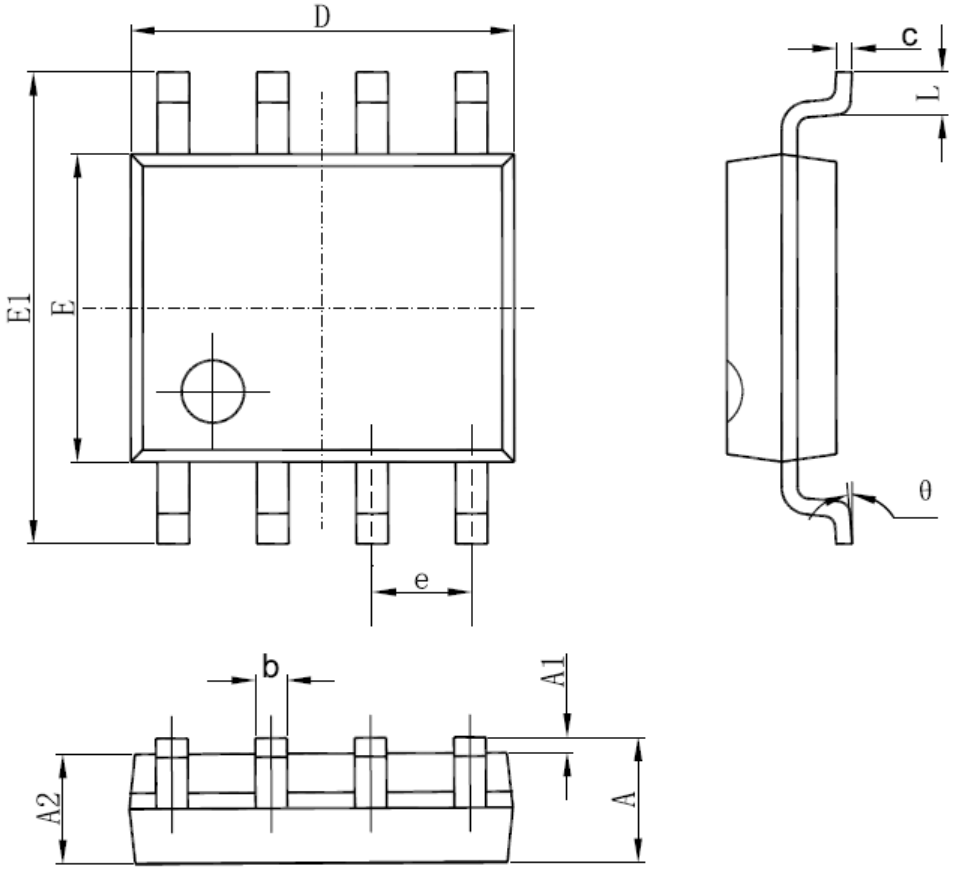
Q_G - Gate Charge (nC)

Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1HC2H	RU1HC2H	SOP-8	Tape&Reel	2500	13''	12mm

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	θ	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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