

Features

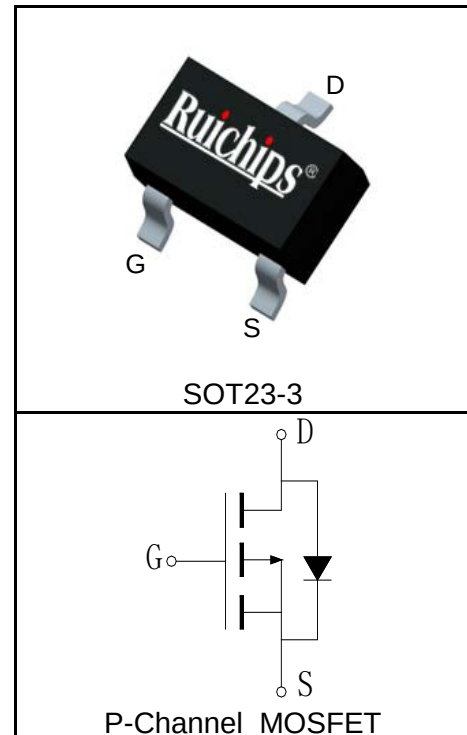
- -18V/-12A,
 $R_{DS(ON)} = 12m\Omega(Typ.)@V_{GS}=-4.5V$
 $R_{DS(ON)} = 15m\Omega(Typ.)@V_{GS}=-2.5V$
- Uses Ruichips Proprietary New Trench™ Technology
- Low On-Resistance
- Exceptional dv/dt capability
- Low Gate Charge Minimize Switching Loss
- Lead Free and Green Devices (RoHS Compliant)

Applications

- Load Switch
- Power Management
- Battery Protection



Pin Description



Absolute Maximum Ratings

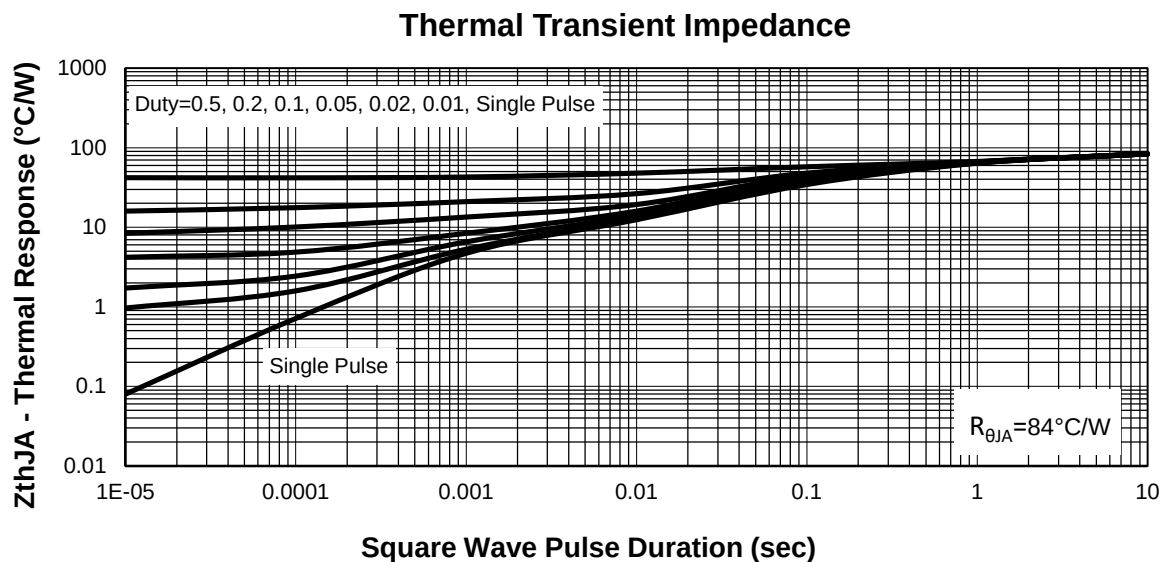
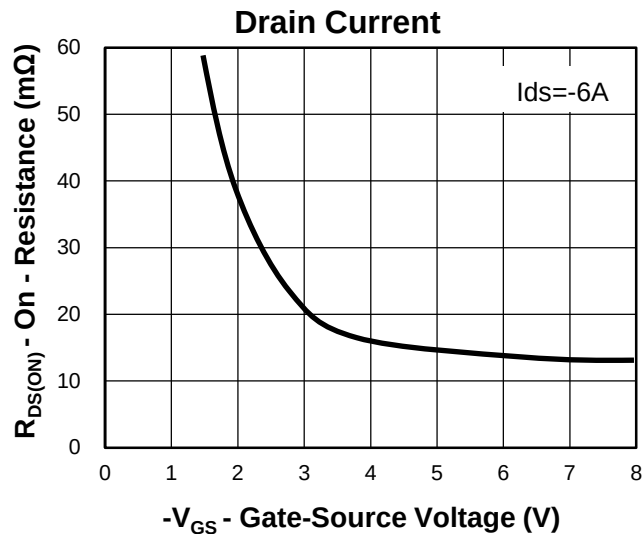
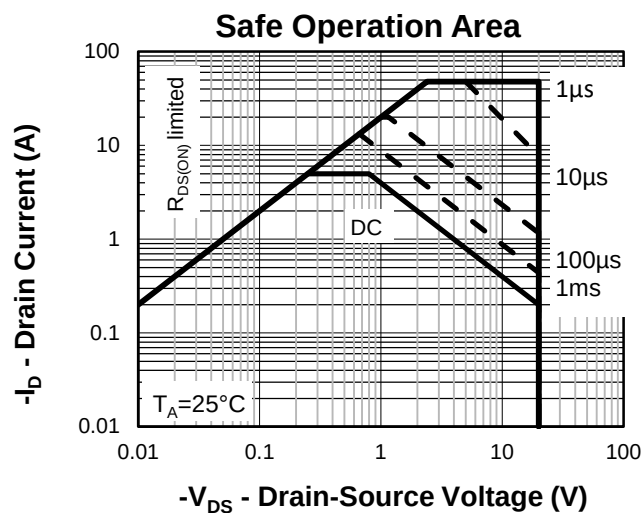
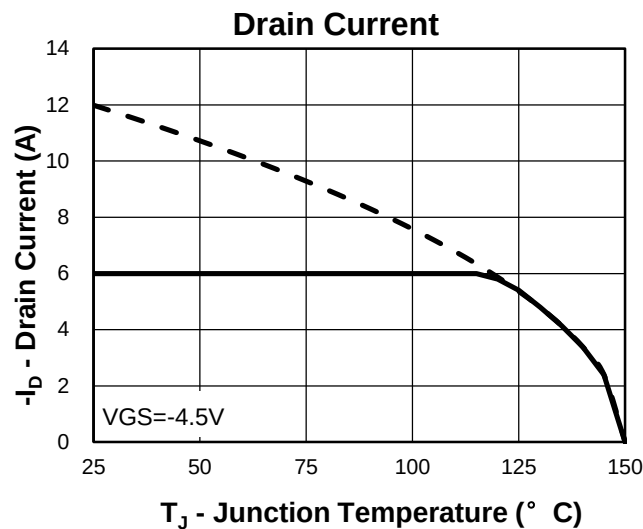
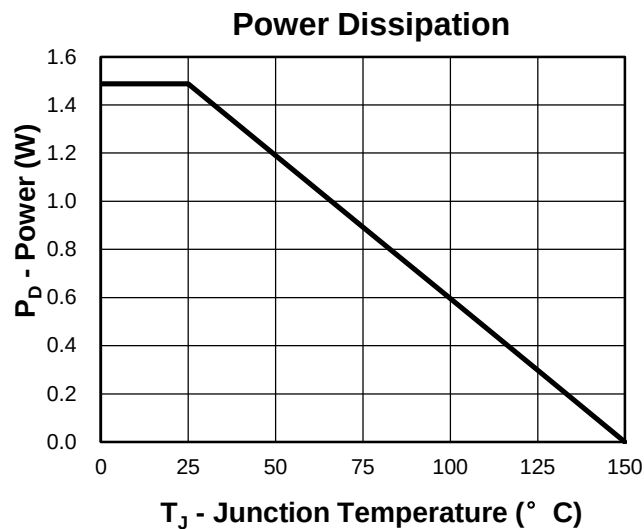
Symbol	Parameter	Rating	Unit
Common Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	-18	V
V_{GSS}	Gate-Source Voltage	± 10	
T_J	Maximum Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
I_S	Diode Continuous Forward Current	$T_A = 25^\circ C$	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_A = 25^\circ C$	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=-10V$)	$T_A = 25^\circ C$	A
		$T_A = 70^\circ C$	
P_D	Maximum Power Dissipation	$T_A = 25^\circ C$	W
		$T_A = 70^\circ C$	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	-	$^\circ C/W$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	84	$^\circ C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	-	mJ

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

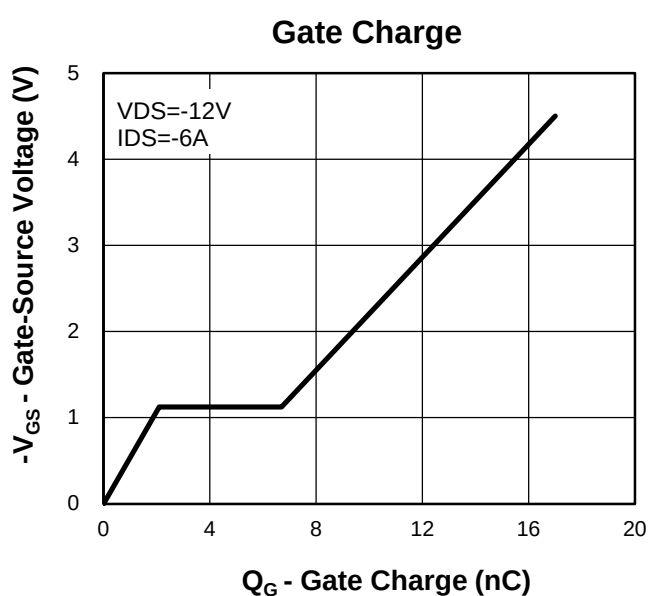
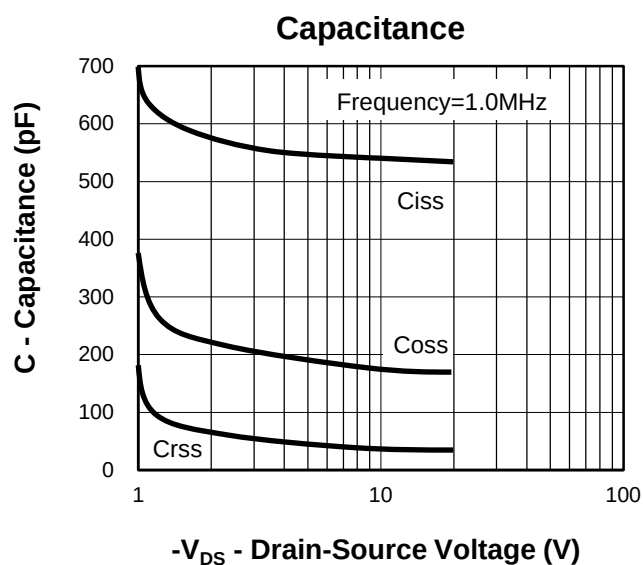
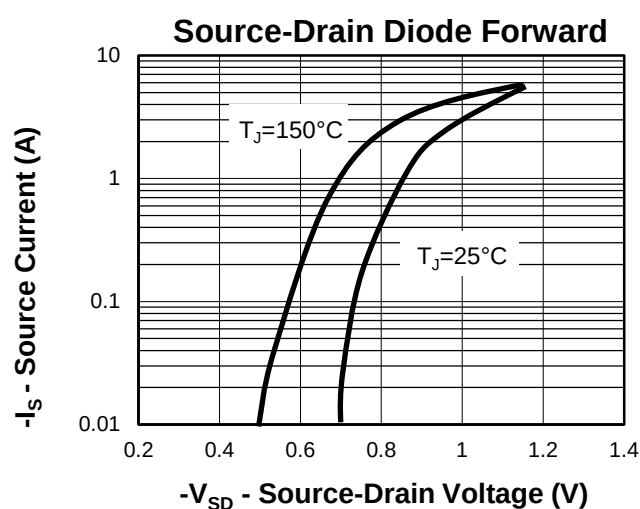
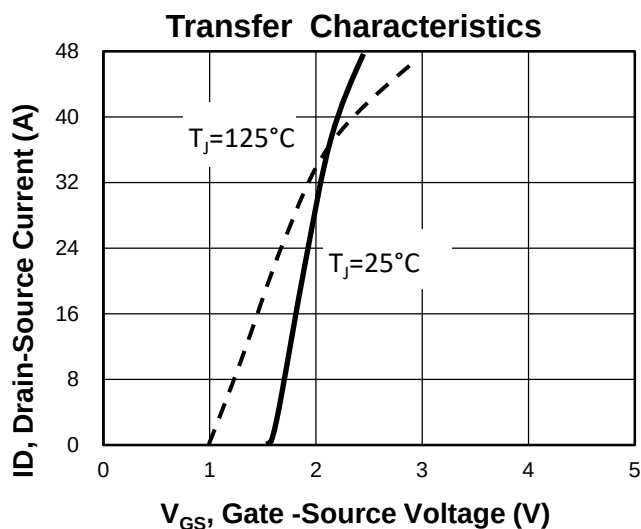
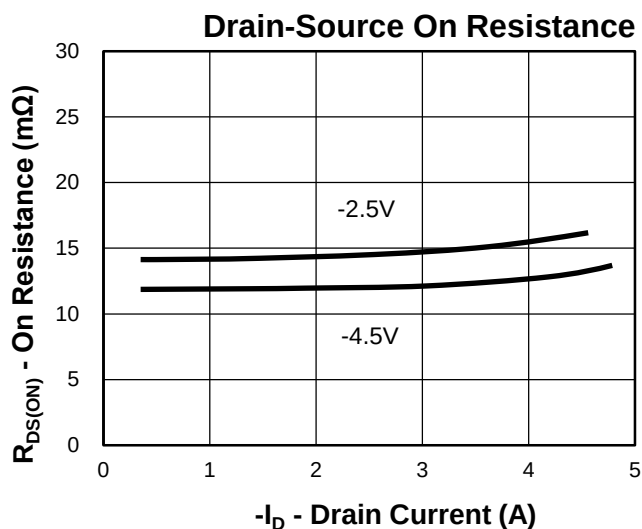
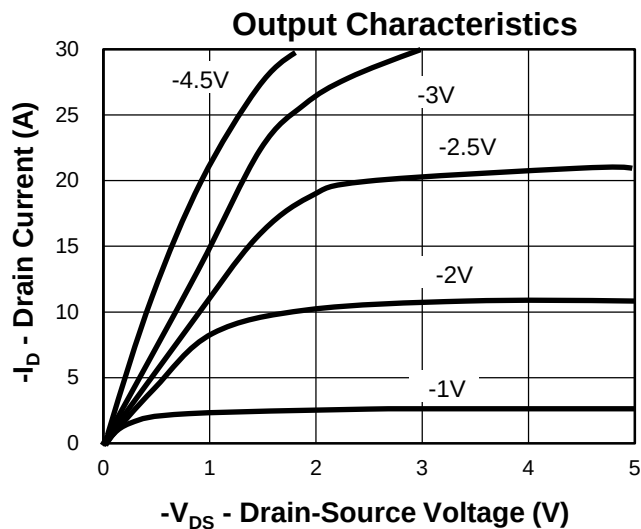
Symbol	Parameter	Test Condition	RU17P12C			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-18			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-18V, V _{GS} =0V			-1	μA
			T _J =125°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.4		-1.1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V			±100	nA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-6A		12	15	mΩ
		V _{GS} =-2.5V, I _{DS} =-5A		15	19	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V			-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-6A, dI _{SD} /dt=100A/μs		21		ns
Q _{rr}	Reverse Recovery Charge			11		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2.1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz		530		pF
C _{oss}	Output Capacitance			167		
C _{rss}	Reverse Transfer Capacitance			44		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =1Ω, I _{DS} =-6A, V _{GEN} =-4.5V, R _G =1.7Ω		21		ns
t _r	Turn-on Rise Time			63		
t _{d(OFF)}	Turn-off Delay Time			56		
t _f	Turn-off Fall Time			19		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =-12V, V _{GS} =-4.5V, I _{DS} =-6A		17		nC
Q _{gs}	Gate-Source Charge			2.1		
Q _{gd}	Gate-Drain Charge			4.6		

- 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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

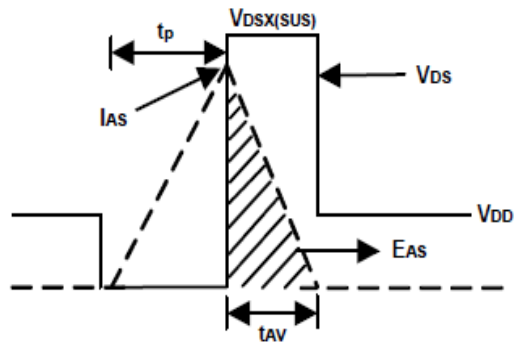
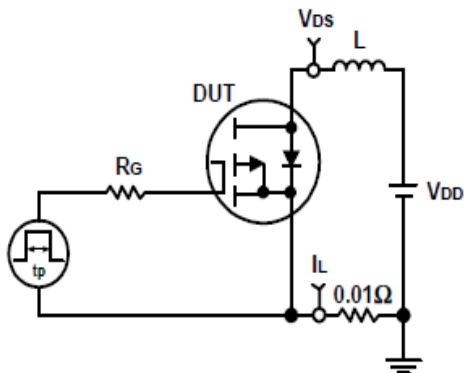
Typical Characteristics



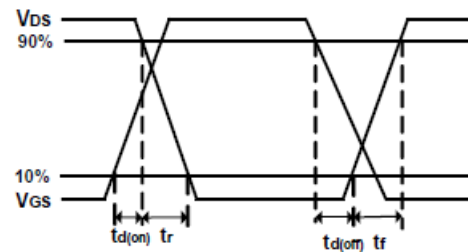
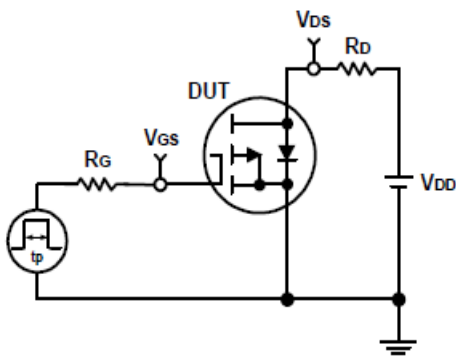
Typical Characteristics



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

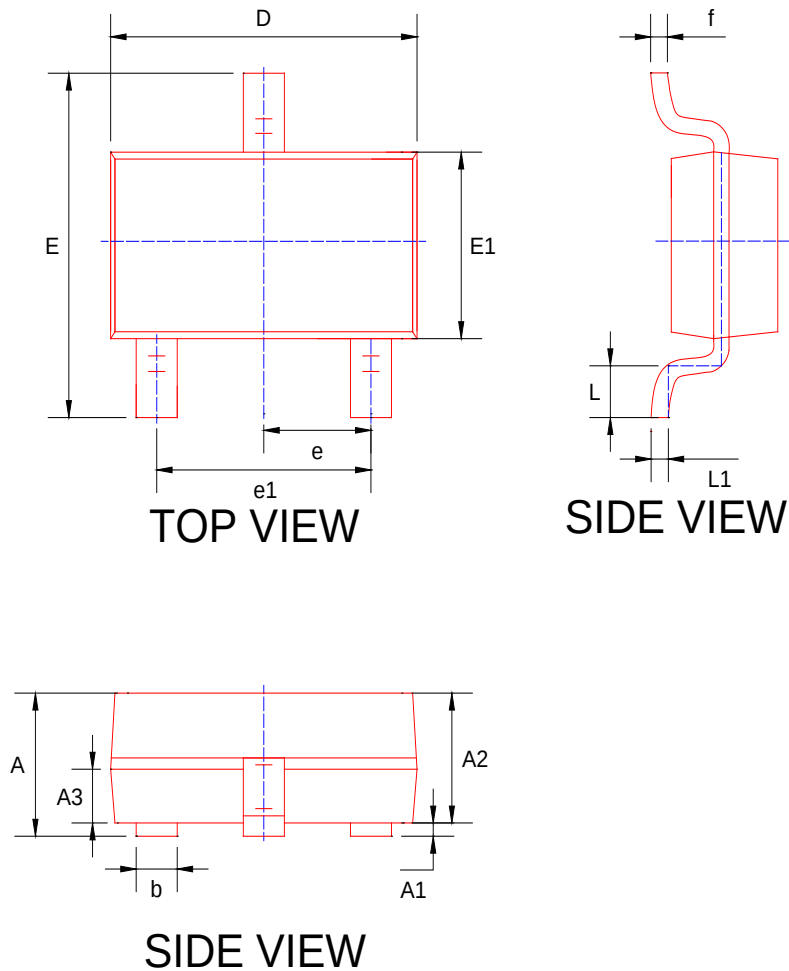


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU17P12C	RU17P12	SOT23-3	Tape&Reel	3000	7"	8mm

Package Information

SOT23-3



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	—	—	1.300			0.051
A1	0.050	0.070	0.110	0.002	0.003	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
A3	0.600	0.650	0.700	0.024	0.026	0.028
b	0.350	0.400	0.450	0.014	0.016	0.018
e	0.920	0.950	0.980	0.036	0.037	0.039
e1	1.850	1.900	1.950	0.073	0.075	0.077
D	2.820	2.870	2.920	0.111	0.113	0.115
E	2.650	2.800	2.950	0.104	0.110	0.116
E1	1.550	1.600	1.650	0.061	0.063	0.065
L	0.400	0.450	0.500	0.016	0.018	0.020
f	0.065	0.125	0.185	0.003	0.005	0.007
L1	0.25BSC			0.010BSC		