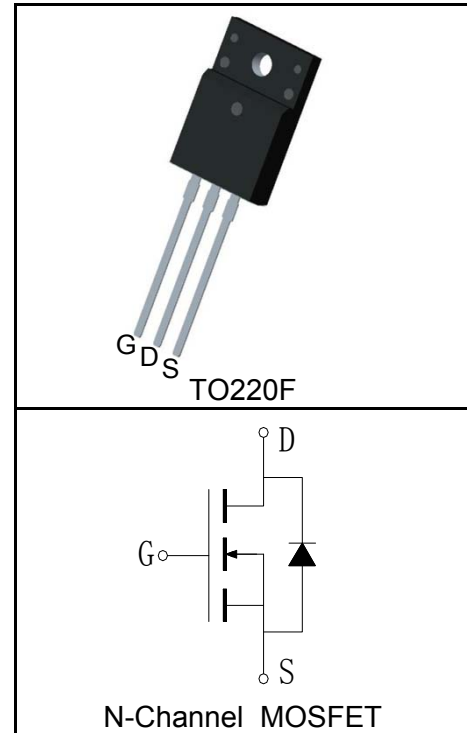


Features

- 650V/12A,
 $R_{DS(ON)} = 340m\Omega(Typ.)@V_{GS}=10V$
- Ultra Low Rdson
- Fast Switching
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description

Applications

- AC/DC Power Conversion in Switched Mode Power Supplies (SMPS)
- Adapter
- LED driver

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	650	V
V_{GSS}	Gate-Source Voltage	± 30	
T_J	Maximum Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$ 12	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$ 48	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ C$ 12	A
		$T_C=100^\circ C$ 7.5	
P_D	Maximum Power Dissipation	$T_C=25^\circ C$ 24	W
		$T_C=100^\circ C$ 9.5	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	5.3	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{③}$	Avalanche Energy, Single Pulsed	100	mJ

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

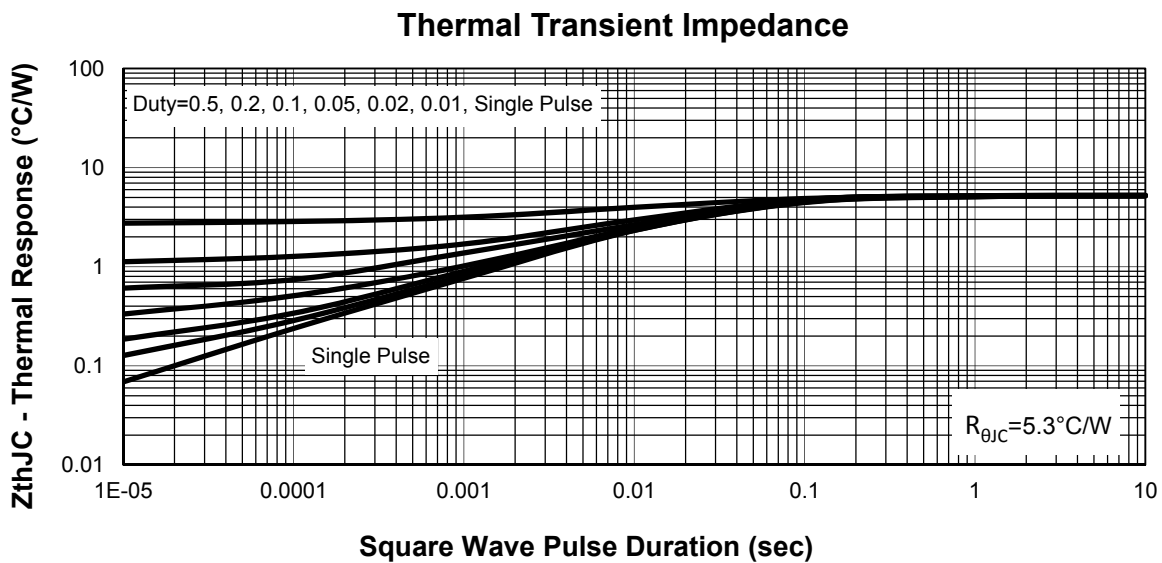
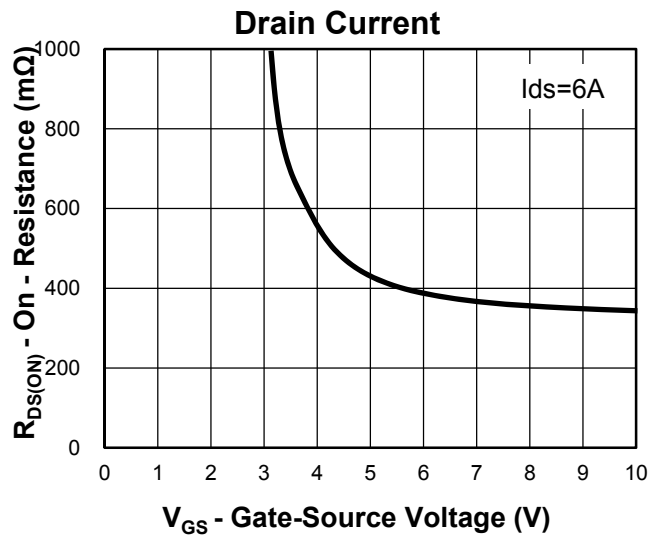
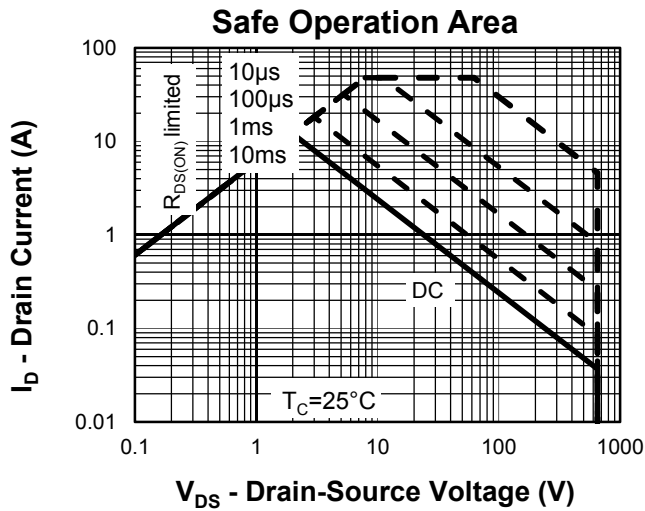
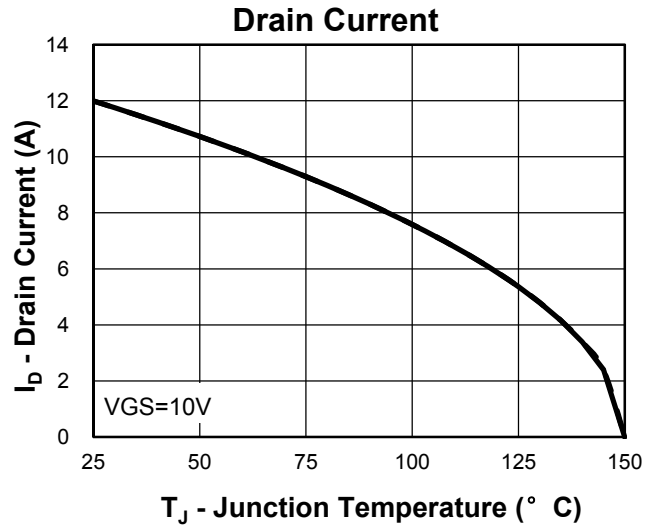
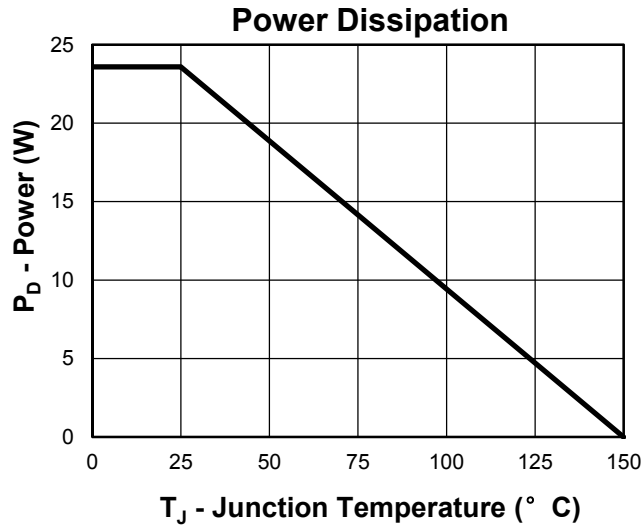
Symbol	Parameter	Test Condition	RU65R340P			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	650			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=650V, V_{GS}=0V$			1	μA
		$T_J=125^\circ C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2		4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(4)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=6A$		340	400	m Ω
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=12A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=12A, di_{SD}/dt=100A/\mu s$		230		ns
Q_{rr}	Reverse Recovery Charge			2.4		μC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		4.7		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=300V,$ Frequency=1.0MHz		530		pF
C_{oss}	Output Capacitance			78		
C_{riss}	Reverse Transfer Capacitance			16		
$t_{d(ON)}$	Turn-on Delay Time		$V_{DD}=300V, R_L=25\Omega,$ $I_{DS}=12A, V_{GEN}=10V,$ $R_G=25\Omega$		19	
t_r	Turn-on Rise Time			31		
$t_{d(OFF)}$	Turn-off Delay Time			41		
t_f	Turn-off Fall Time			23		
Gate Charge Characteristics ⁽⁵⁾						
Q_g	Total Gate Charge	$V_{DS}=520V, V_{GS}=10V,$ $I_{DS}=12A$		16		nC
Q_{gs}	Gate-Source Charge			4		
Q_{gd}	Gate-Drain Charge			7		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ Limited by $T_{Jmax}, I_{AS}=4.5A, V_{DD}=100V, R_G=50\Omega$, Starting $T_J=25^\circ C$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

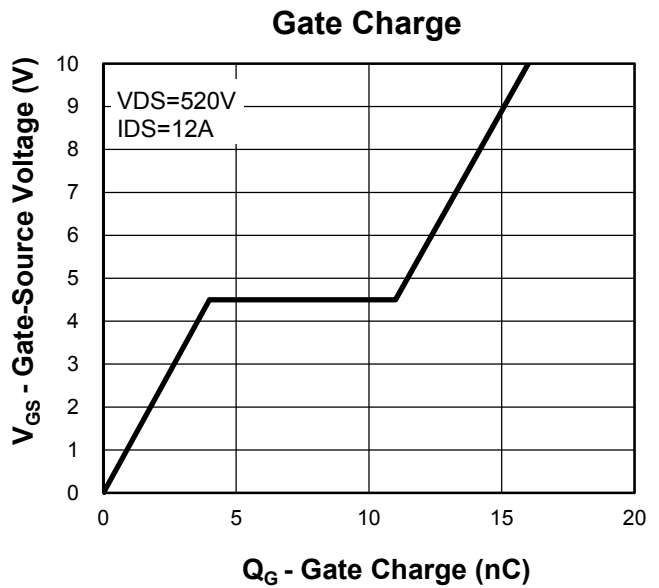
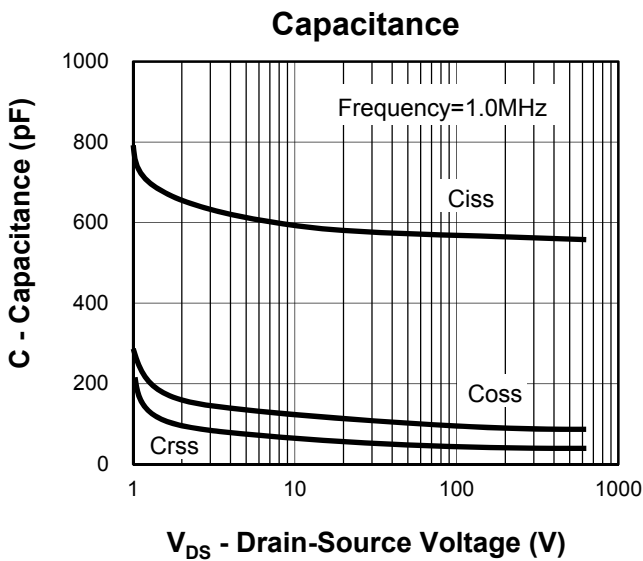
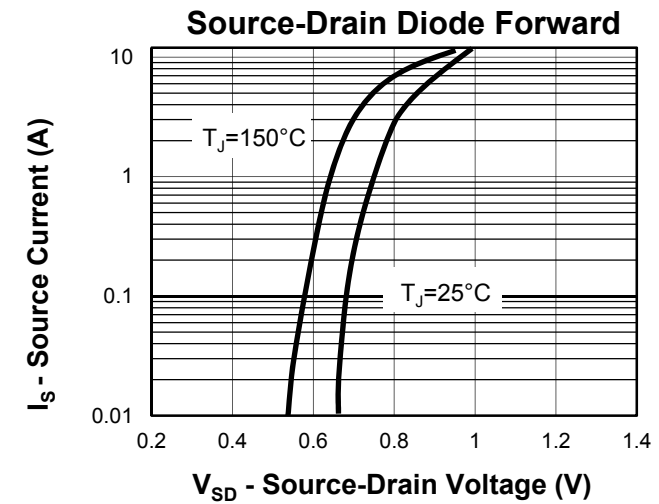
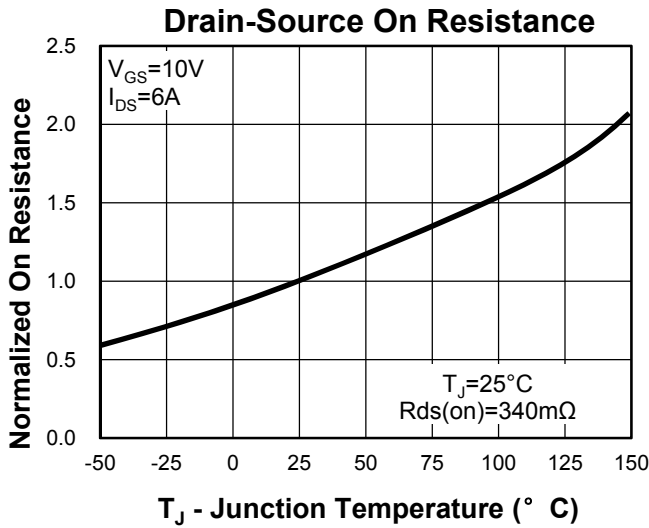
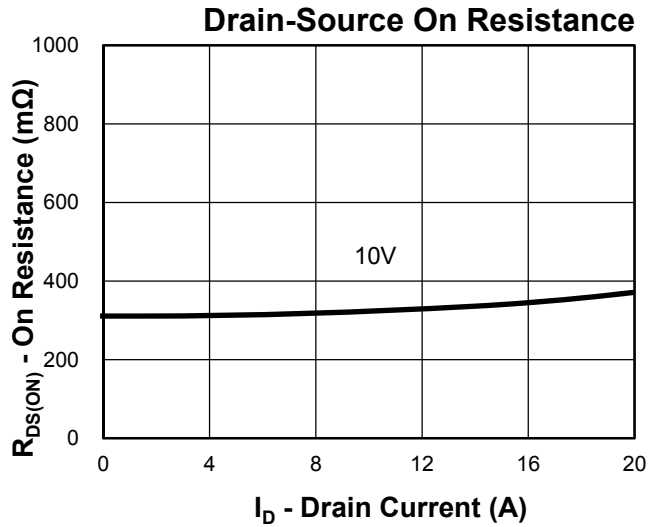
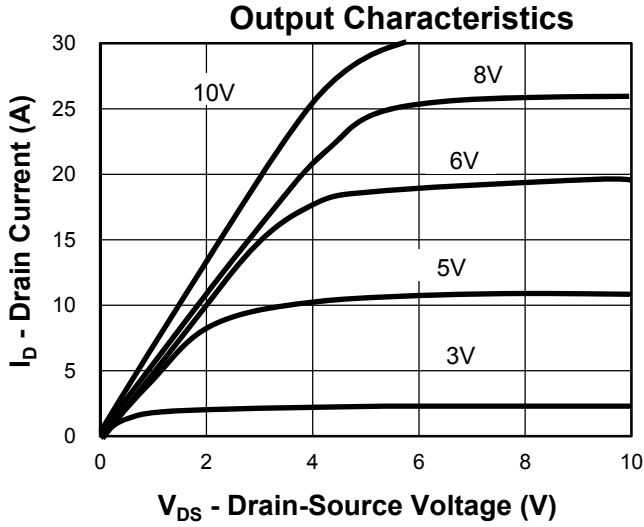
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU65R340P	RU65R340P	TO220F	Tube	50	-	-

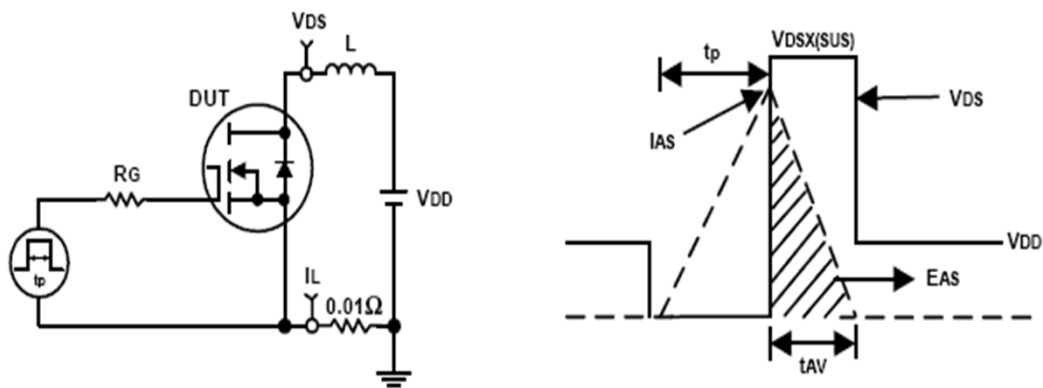
Typical Characteristics



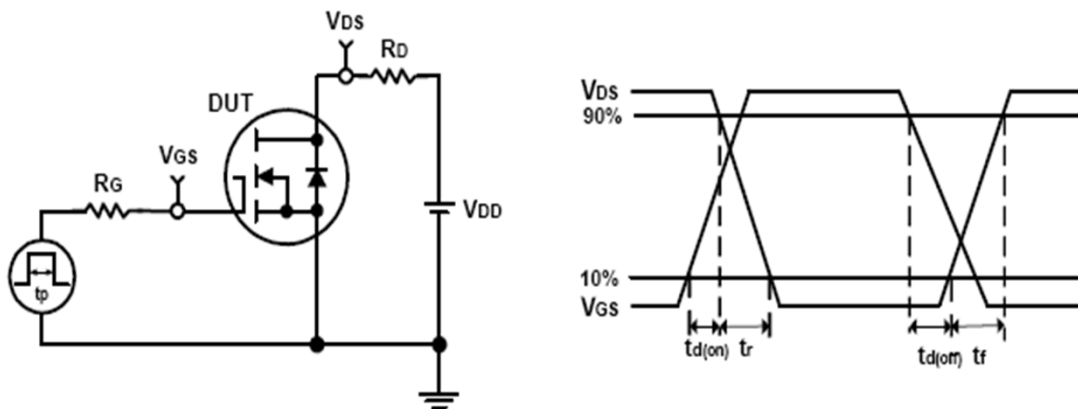
Typical Characteristics



Avalanche Test Circuit and Waveforms

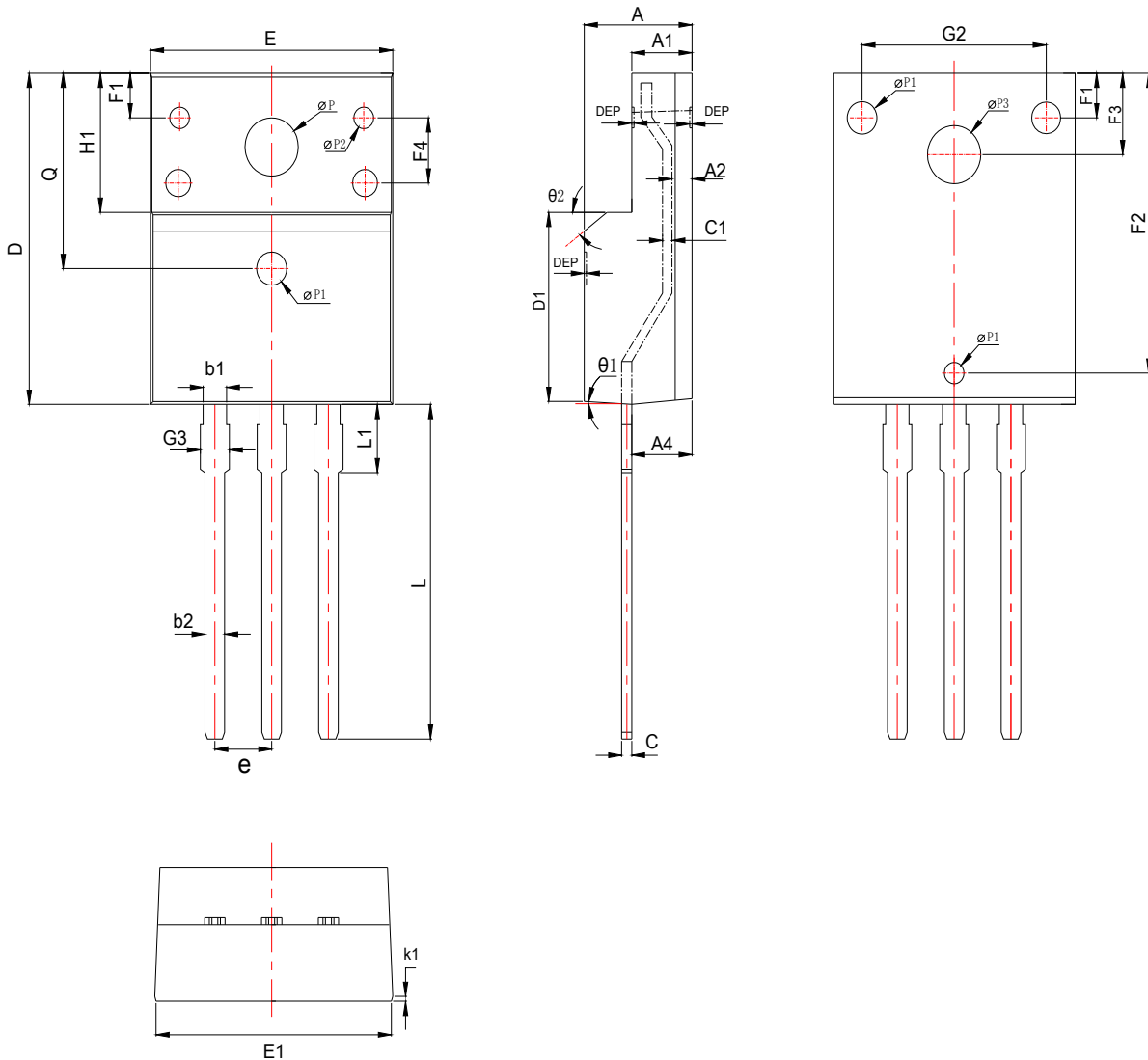


Switching Time Test Circuit and Waveforms



Package Information

TO220F



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
E	9.96	10.16	10.36	0.392	0.400	0.408	$\phi p2$	1.15	1.20	1.25	0.045	0.047	0.049
A	4.50	4.70	4.90	0.177	0.185	0.193	$\phi p3$		3.450			0.136	
A1	2.34	2.54	2.74	0.092	0.100	0.108	$\theta 1$	5°	7°	9°	5°	7°	9°
A2	0.95	1.05	1.15	0.037	0.041	0.045	$\theta 2$		45°			45°	
A4	2.65	2.75	2.85	0.104	0.108	0.112	DEP	0.05	0.10	0.15	0.002	0.004	0.006
c		0.50			0.020		F1	1.90	2.00	2.10	0.075	0.079	0.083
c1		0.50			0.020		F2	13.61	13.81	14.01	0.536	0.544	0.552
D	15.67	15.87	16.07	0.617	0.625	0.633	F3	3.20	3.30	3.40	0.126	0.130	0.134
Q	8.80	9.00	9.20	0.346	0.354	0.362	F4	5.25	5.40	5.55	0.207	0.213	0.219
H1	6.48	6.68	6.88	0.255	0.263	0.271	G2	6.90	7.00	7.10	0.272	0.276	0.280
e		2.54BSC			0.100BSC		G3	1.10	1.30	1.50	0.043	0.051	0.059
Φp		3.183			0.125		b1	1.17	1.21	1.24	0.046	0.047	0.049
L	12.78	12.98	13.18	0.503	0.511	0.519	b2	0.77	0.80	0.85	0.030	0.032	0.033
L1	3.25	3.45	3.65	0.128	0.136	0.144	E1	9.80	10.00	10.20	0.386	0.394	0.402
D1	8.99	9.19	9.39	0.354	0.362	0.370	K1	0.65	0.70	0.75	0.026	0.028	0.030
$\Phi p1$	1.40	1.50	1.60	0.055	0.059	0.063							

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