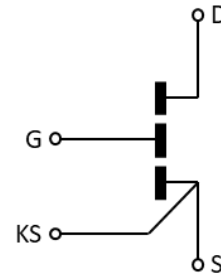
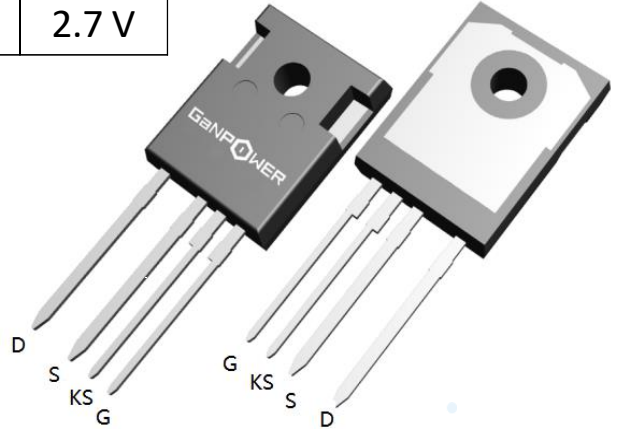


Features

BV_{dss}	R_{dson}	I_{ds}	Q_g	V_{gs}	V_{th}
1100 V	60 mΩ	30 A	8.25 nC	±20 V	2.7 V

- 1100V transient drain-to-source voltage
- Pin-to-Pin compatible with MOSFET
- Larger V_{gs} range
- High V_{th}
- High dv/dt
- Ultra-low R_{dson}
- Extremely low input capacitance
- Zero Q_{rr}
- Outstanding switching performance



Applications

- Switching Power Applications
- Adapters
- Quick Chargers

Description

These devices are N-channel 1100 V Power GaN HEMTs based on proprietary E-mode GaN on silicon technology. The resulting product has extremely low on state resistance, very low input capacitance and zero reverse recovery charge making it especially suitable for applications which require superior power density, ultra-high switching frequency and outstanding efficiency.

Ordering Information

Order Code	Package Type	Packaging Method	Qty
GP120R60T4	TO247-4	Tube	30pcs/Tube 240pcs/Box

Device Characteristics

Static Parameters				Test data				
	Parameters		Conditions	Min	Typical	Max	Unit	
1	$V_{gs(TH)}$	Gate threshold voltage	$V_{ds}=V_{gs}$, $I_d=21$ mA ($T_J=25$ °C)	1.5	2.7	4	V	
2	V_{GS}^1	Gate-Source voltage range		-20	6~12	20	V	
3	BV_{dss}^2	Drain-Source breakdown voltage	$V_{gs}=0V$, $I_d < 1$ mA ($T_J=25$ °C)		1100		V	
4	I_{dss}	Zero gate voltage drain leakage current	$V_{gs}=0V$, $V_{ds}=700V$ $T_J = 25$ °C		250	950	μA	
5	I_{gss}	Gate-Source Leakage	$V_{gs} = 6V$, $V_{ds} = 0V$		0.7	30	mA	
6	R_{dson}	drain-source on resistance	$V_{gs}=6V$, $I_d=0.8A$ $T_J = 25$ °C		42	60	mΩ	
7	V_{sd}	Reverse conduction voltage	$I_{sd}=0.12A$, $V_{gs}=0V$	1.2	2.0	3	V	
8	R_g	Gate resistance	f=25Mhz Open drain		1.5		Ω	
Dynamic Parameters				Test data				
	Parameters		Conditions	Min	Typical	Max	Unit	
1	C_{ISS}	Input capacitance	$V_{gs} = 0$ V $V_{ds} = 700$ V f = 1MHz		236		pf	
2	C_{OSS}	Output capacitance				72		pf
3	C_{RSS}	Reverse transfer capacitance				4.6		pf
4	Q_g	Gate charge	$V_{ds} = 400V$ $I_d = 9A$ $V_{gs} = 6V$		8.25		nC	
5	Q_{gs}	Gate to source charge				1.5		nC
6	Q_{gd}	Gate to drain charge				1.8		nC
7	Q_{rr}	Reverse recovery charge			0		nC	
Switching Performance				Test data				
	Parameters		Conditions	Min	Typical	Max	Unit	
1	$t_{d(on)}$	Turn-on delay time	$V_{ds} = 800V$ $I_d = 15A$ $R_g = 10\Omega$ $V_{gs} = -3/6.5V$		34		ns	
2	t_r	Rise time				26		ns
3	$t_{d(off)}$	Turn-off delay time				33		ns
4	t_f	Fall time				20		ns

¹ A wider range of gate driving from -20V to 20V can be accepted, but recommended range is still -3V to 6.5V. Wider range protects the gate from damage, but at some cost of power loss.

² BV_{dss} refers to DC withstanding voltage. This product is recommended for DC bus voltage of 800-1000V.

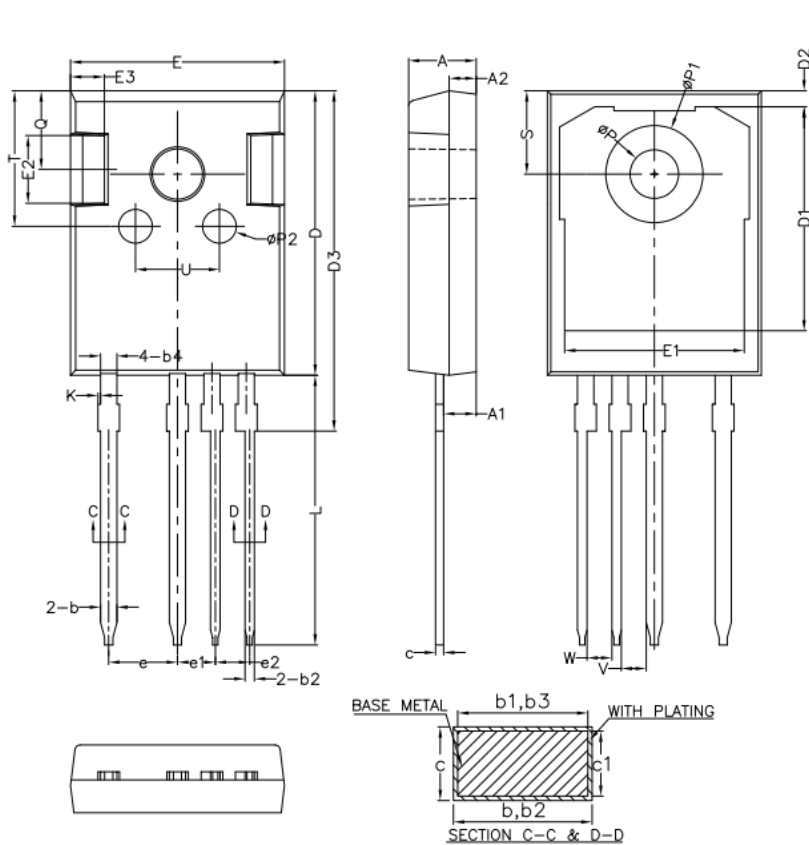
Absolute Max. Ratings

	Symbols	Parameters	Value	Unit
1	V_{DS-max}	Breakdown voltage transient @ $T_{case}=25^{\circ}C$	1100	V
2	V_{DS-max}	Breakdown voltage transient @ $T_{case}=125^{\circ}C$	1000	V
3	V_{GS-max}	Gate to source max. voltage @ $T_{case}=25^{\circ}C$	-20 to +20	V
4	I_{ds-max}	Drain to source pulse current @ $T_{case}=25^{\circ}C$, pulse width 10 μs , $V_{GS} = 6 V$	30	A
5	I_{ds-max}	Drain to source pulse current @ $T_{case}=150^{\circ}C$	22	A
6	$dv/dt-max$	Drain to source voltage slew rate	200	V/ns
7	T_J-max	Max junction temperature	150	$^{\circ}C$
8	$T_S-storage$	Storage temperature	-55 to 150	$^{\circ}C$

Thermal and Soldering Characteristics (Typical)

	Symbols	Parameters	Value	Unit
1	R_{thJC}	Thermal resistance (junction to case)	0.6	$^{\circ}C/W$
2	R_{thJA}	Thermal resistance (junction to ambient)	62	$^{\circ}C/W$
3	T_{solder}	Reflow soldering temperature	250	$^{\circ}C$

Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.16	-	1.29
b1	1.15	1.20	1.25
b2	0.66	-	0.79
b3	0.65	0.70	0.75
b4	1.16	-	1.29
c	0.59	-	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
D3	24.97	25.12	25.27
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	4.98	5.08	5.18
e1	2.69	2.79	2.89
e2	2.44	2.54	2.64
K	0	-	0.20
L	19.80	19.92	20.10
P	3.50	3.60	3.70
P1	-	-	7.40
P2	2.40	2.50	2.60
Q	5.60	-	6.00
S	6.00	6.15	6.30
T	9.80	-	10.20
U	6.00	-	6.40
V	1.44	1.84	2.24
W	1.44	1.84	2.24

NOTES:
 1.ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.
 2.EJECTION MARK DEPTH $0.10^{+0.15}_{-0.05}$.

Further information

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Data Source— Data here are based on recent tests but all parameters may not be up to date. Actual final test data from packaging production are available for selected customers upon request.