

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	4.0mΩ@10V	62A
	5.9mΩ@4.5V	

Feature

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

MARKING:



T045N04L = Device Code

XX = Date Code

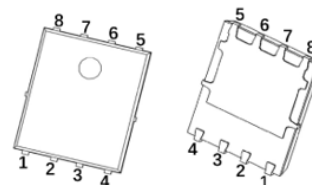
Solid Dot = Green Indicator

PIN 1

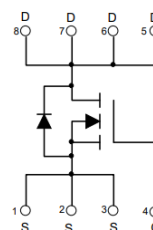
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	40	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	62	A
	$T_C = 100^\circ\text{C}$	I_D	43	A
Pulsed Drain Current ²		I_{DM}	248	A
Single Pulsed Avalanche Current ³		I_{AS}	18.1	A
Single Pulsed Avalanche Energy ³		E_{AS}	76	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	29.8	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	60	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	4.2	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

PDFN5*6-8L



Schematic diagram



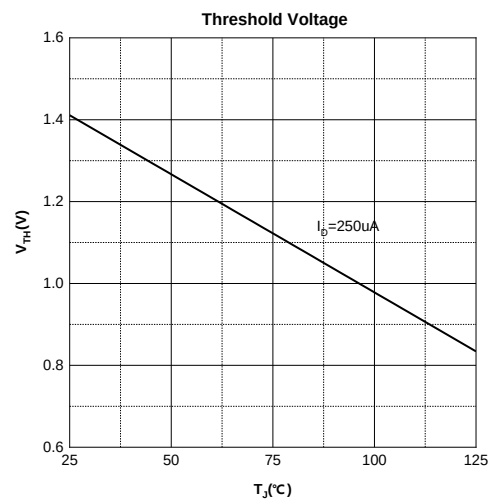
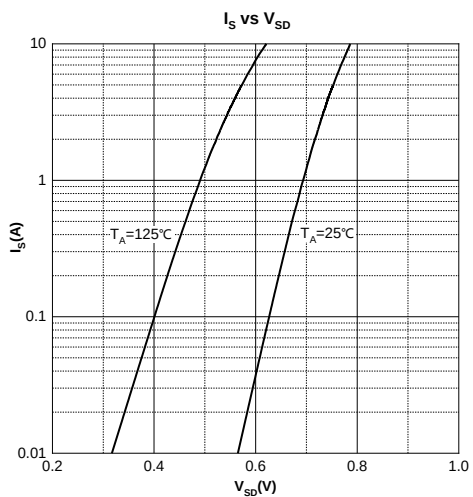
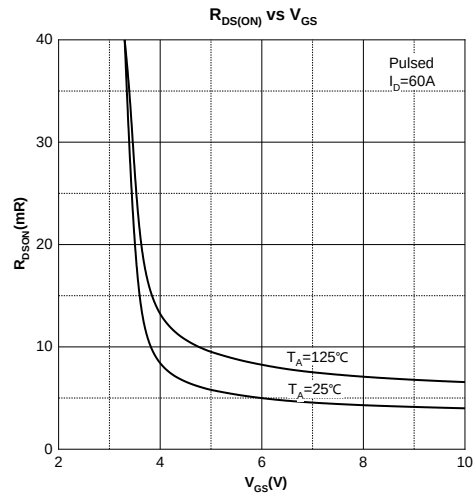
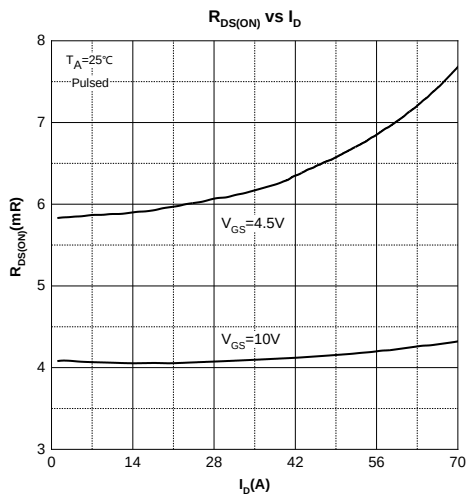
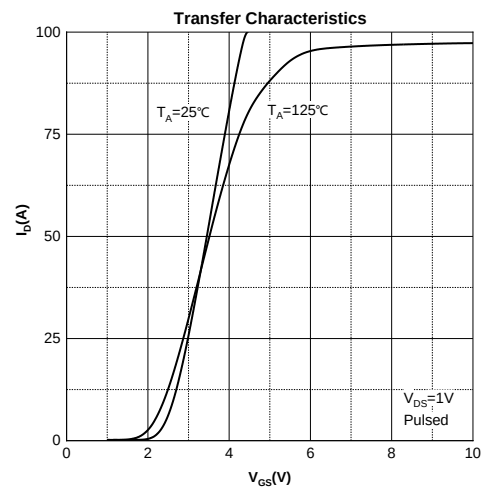
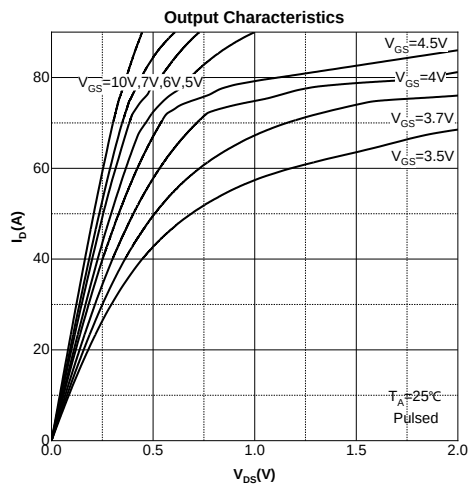
MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

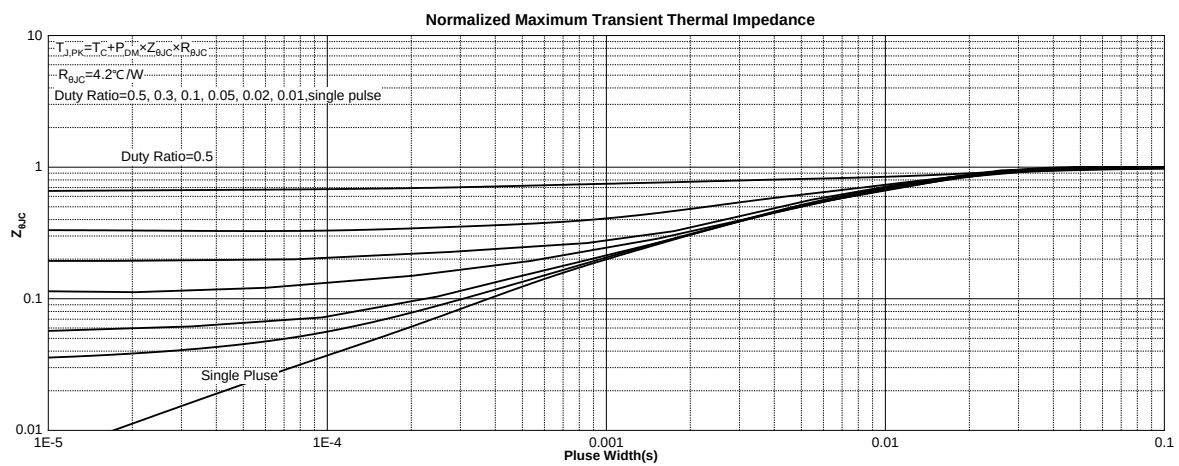
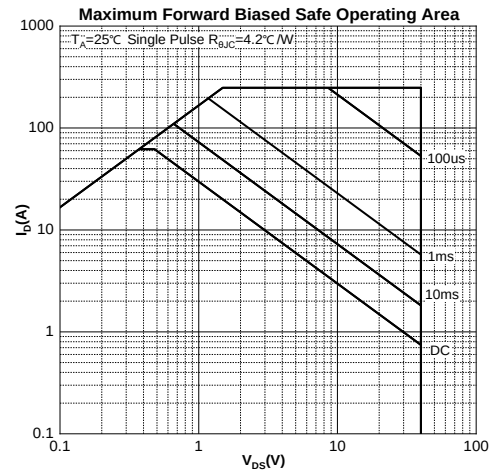
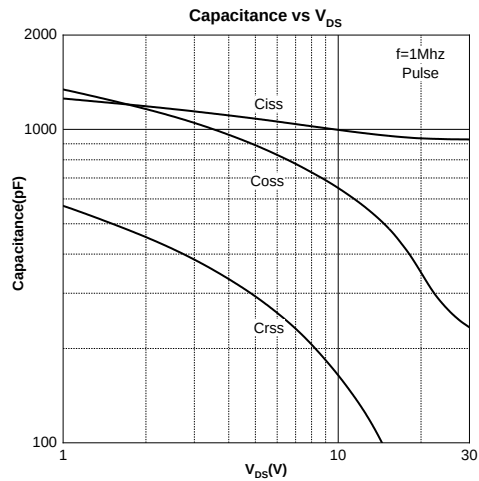
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.4	2.5	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 8A		4.0	5.0	mΩ
		V _{GS} = 4.5V, I _D = 6A		5.9	8.0	
Forward Transconductance	g _{FS}	V _{DS} = 10V, I _D = 1A		3		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		926		pF
Output Capacitance	C _{oss}			353		
Reverse Transfer Capacitance	C _{rss}			48		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2.2		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A		12.3		nC
Gate-source Charge	Q _{gs}			2.3		
Gate-drain Charge	Q _{gd}			6.1		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 25V, V _{GS} = 10V, I _D =1A, R _G = 1Ω		9		ns
Turn-on Rise Time	t _r			5.5		
Turn-off Delay Ttime	t _{d(off)}			27		
Turn-off Fall Time	t _f			40		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 1A			1.2	V

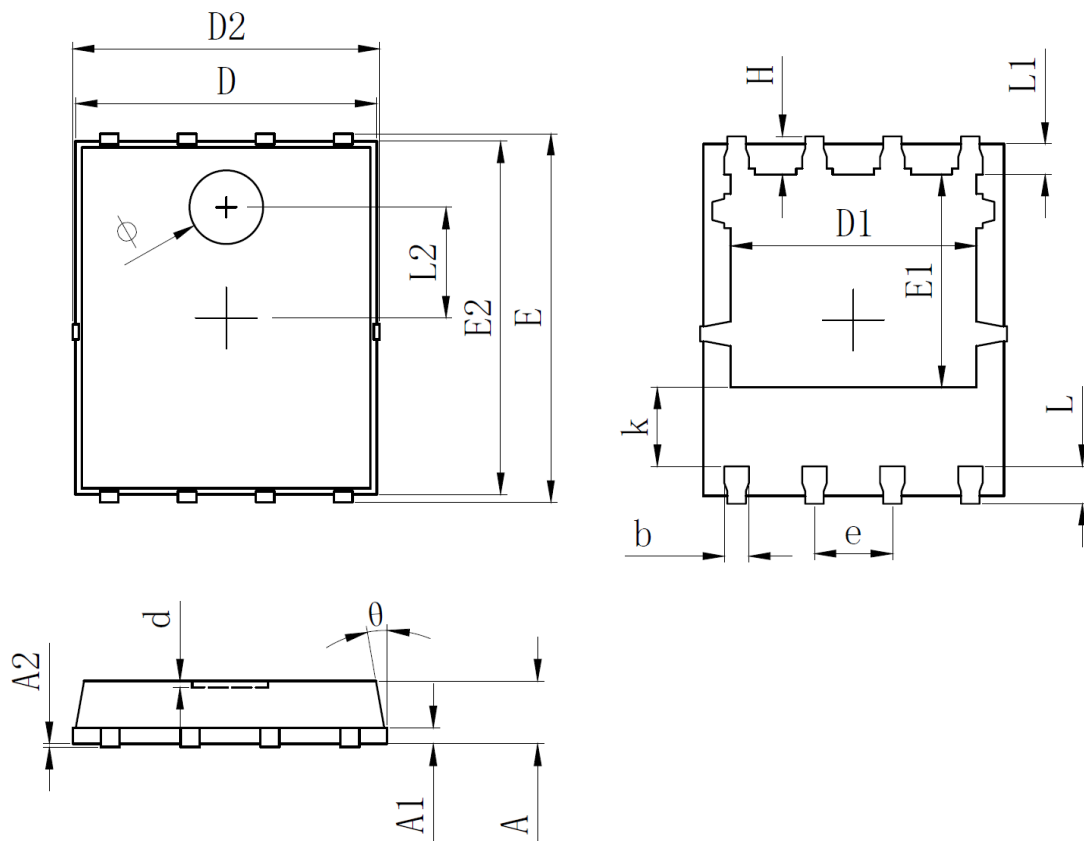
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.And device mounted on a large heatsink
- 6.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics





PDFN5×6-8L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.254REF		0.010REF	
A2	0.000	0.050	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	3.910	4.110	0.154	0.162
D2	4.924	5.076	0.194	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
k	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
θ	8°	12°	8°	12°
Φ	1.100	1.300	0.043	0.051
d	-	0.100	-	0.004