

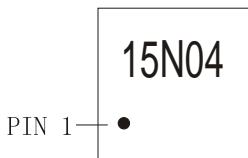
FEATURE

- TrenchFET Power MOSFET
- Low $R_{DS(ON)}$

N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	I_D
40V	19mΩ@10V	15A
	27mΩ@4.5V	

MARKING

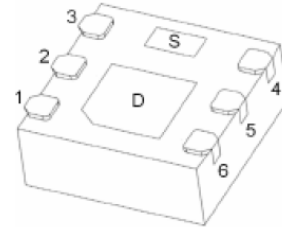


15N04= Part No.
Solid dot = Pin1 indicator.

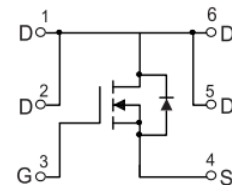
APPLICATION

- Ideal for Load Switch and Battery
- Protection Applications

DFN2020-6L



Equivalent Circuit



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	I_D	15	A
Pulsed Drain Current	I_{DM}^*	30	A
Maximum Power Dissipation	P_D	2	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	$^\circ\text{C}/\text{W}$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

*Repetitive rating : Pulse width limited by junction temperature.



MOSFET ELECTRICAL CHARACTERISTICS

Ta =25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 0.1	μA
Gate threshold voltage(note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$		19	25	m Ω
		$V_{GS} = 4.5V, I_D = 5A$		26	35	m Ω
Forward transconductance (note 1)	g_{FS}	$V_{DS} = 5V, I_D = 4A$		15		S
Diode forward voltage (note 1)	V_{SD}	$I_S = 1A, V_{GS} = 0V$			1	V
DYNAMIC PARAMETERS (note2)						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		370		pF
Output Capacitance	C_{oss}			240		pF
Reverse Transfer Capacitance	C_{rss}			19		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V$ $R_L = 3.75\Omega, R_{GEN} = 3\Omega$		2		ns
Turn-on rise time	t_r			3.5		ns
Turn-off delay time	$t_{d(off)}$			22		ns
Turn-off fall time	t_f			3.5		ns
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 4A$			10	nC
Gate-Source Charge	Q_{gs}			0.5		nC
Gate-Drain Charge	Q_{gd}			1		nC

Notes : 1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.

2. Guaranteed by design, not subject to production testing.

Typical Characteristics

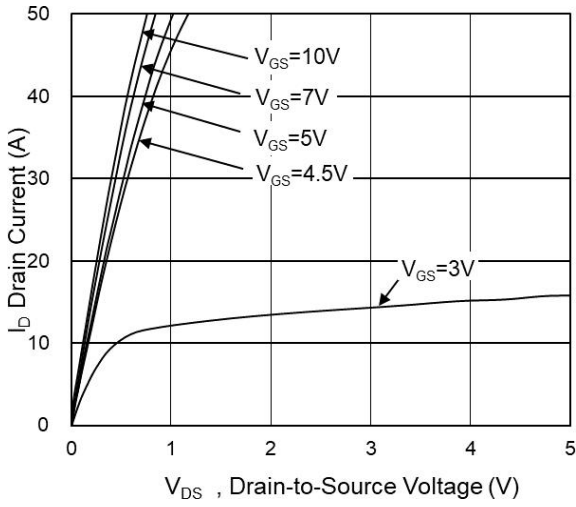


Fig.1 Typical Output Characteristics

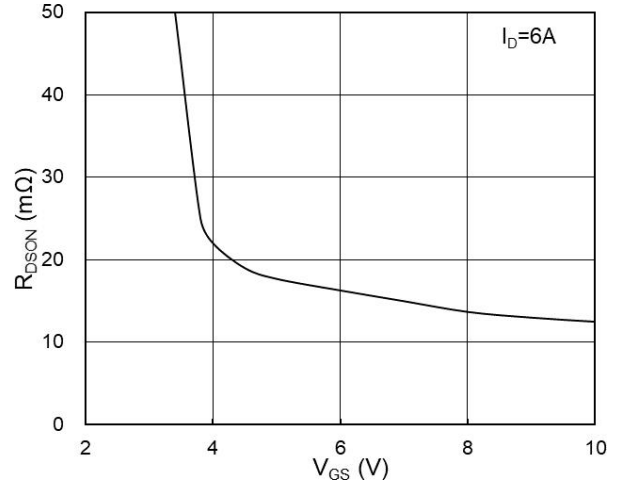


Fig.2 On-Resistance vs G-S Voltage

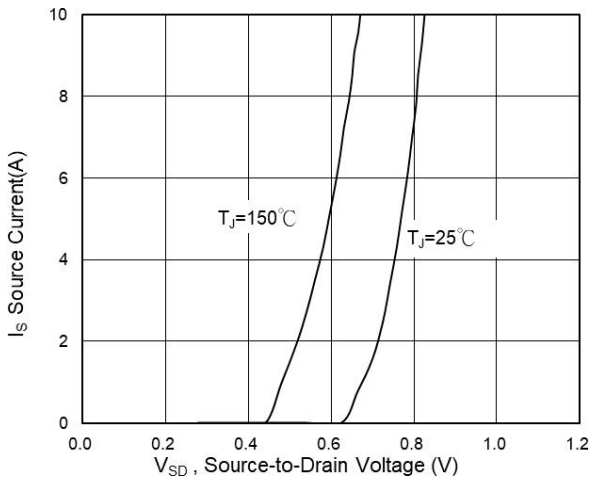


Fig.3 Source Drain Forward Characteristics

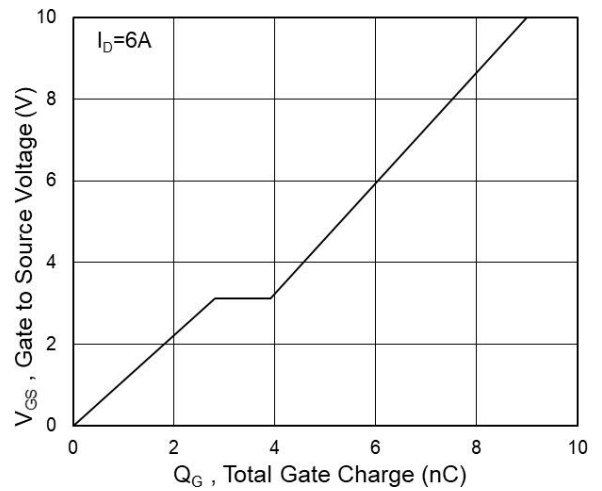


Fig.4 Gate-Charge Characteristics

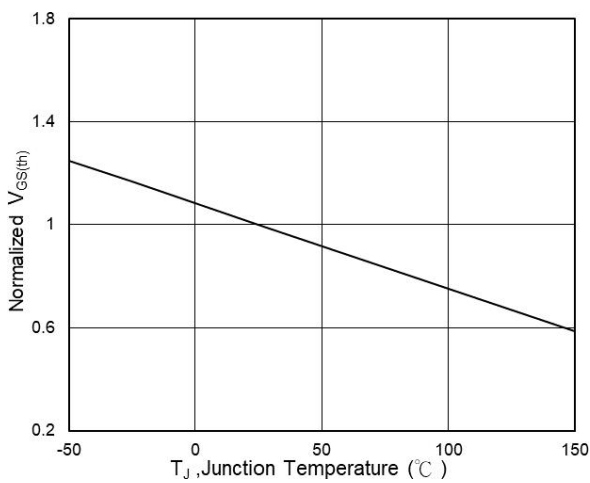


Fig.5 Normalized $V_{GS(th)}$ vs T_J

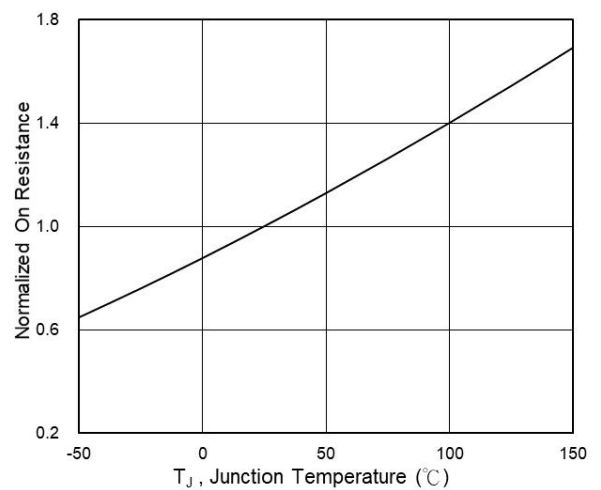


Fig.6 Normalized $R_{DS(on)}$ vs T_J

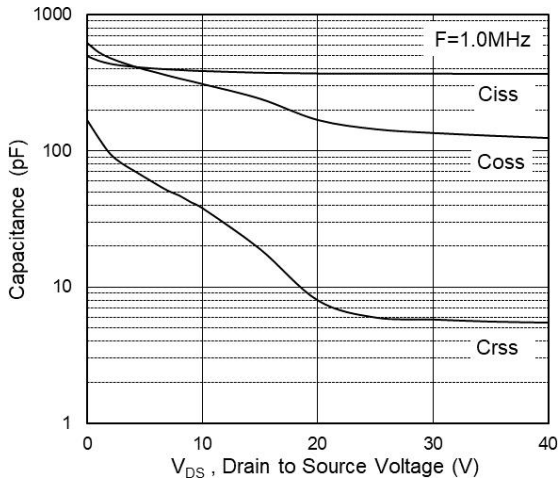


Fig.7 Capacitance

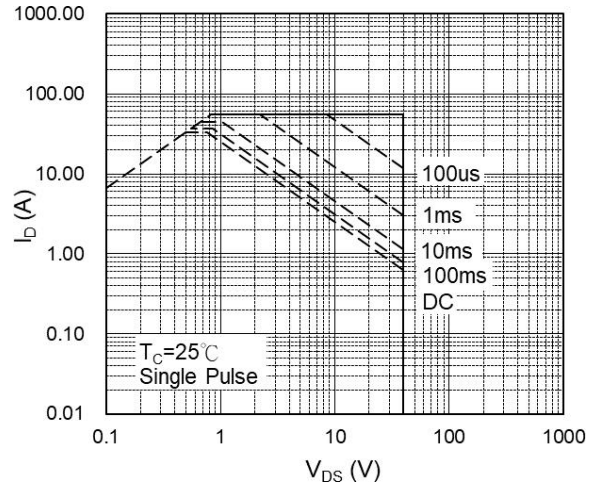


Fig.8 Safe Operating Area

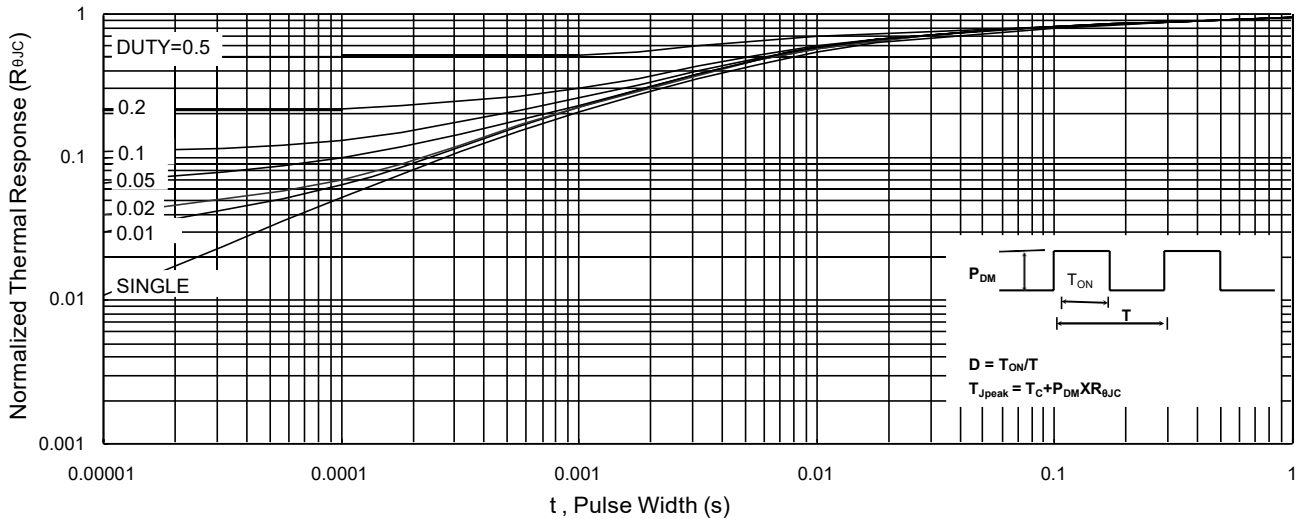


Fig.9 Normalized Maximum Transient Thermal Impedance

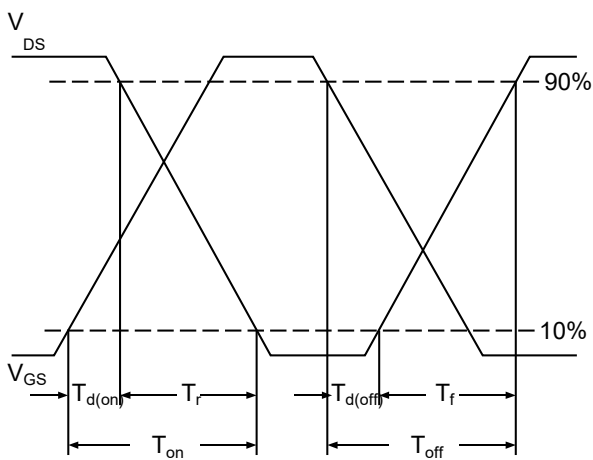


Fig.10 Switching Time Waveform

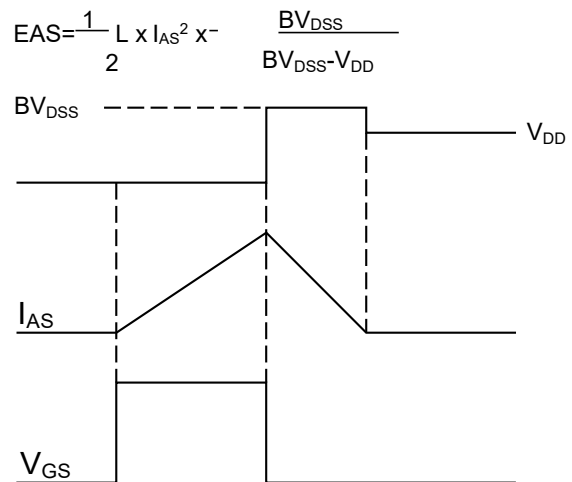
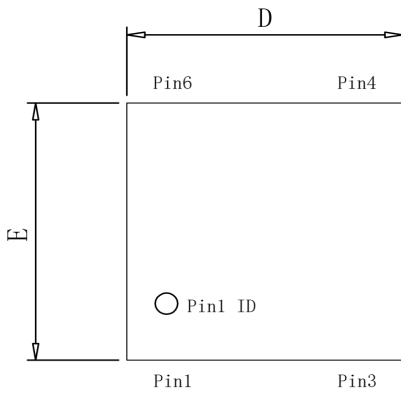
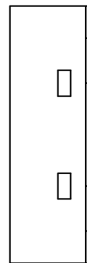


Fig.11 Unclamped Inductive Switching Waveform

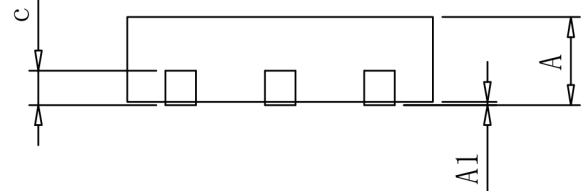
DFN2020-6L-JPackageOutlineDimensions



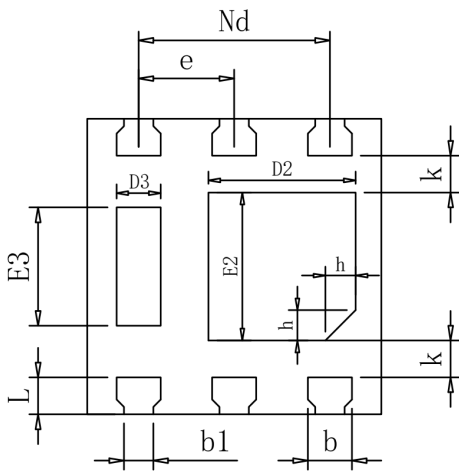
Top View



Side View



Side View



Bottom View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	--	0.02	0.05
b	0.25	0.30	0.35
b1	0.15	0.20	0.25
c	0.203 REF		
D	1.90	2.00	2.10
D2	0.90	1.00	1.10
D3	0.20	0.30	0.40
Nd	1.30 BSC		
e	0.65 BSC		
E	1.90	2.00	2.10
E2	0.90	1.00	1.10
E3	0.70	0.80	0.90
h	0.155	0.205	0.255
k	0.20	0.25	0.30
L	0.20	0.25	0.30