150V N-Channel Power MOSFET

V_{DSS}	150V
I_D @V_{GS}=10V	143A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	3.9mΩ

DESCRIPTION：

·Ultra-low $R_{DS(ON)}$

·Low Gate Charge

·100% UIS and ΔVds Tested

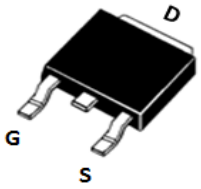
·Halogen-free and RoHS-compliant

APPLICATIONS:

·Load Switch

·PWM Application

·Power Management



TO-263-3L

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	143 90	A
Pulsed Drain Current (1)		I_{DM}	Refer to Fig.4	A
Avalanche Energy(2)		E_{AS}	1488	mJ
Power dissipation	Tc=25℃ Tc=100℃	P_D	233 93	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting TJ=25C, VDD=75V, VGS=10V, RG=25ohm, L=3mH, IAS=31.5A, VDD=0V during time in avalanche.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction-to-Case	$R_{\theta JA}$ $R_{\theta JC}$	34 0.5	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	150			V
Zero Gate Voltage Drain Current VDS = 120 V, VGS = 0 V, T_J = 25 °C	I_{DSS}			1.0	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2.8	4.0	5.2	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A	$R_{DS(on)}$		3.9	5.1	mΩ
Gate Resistance VGS = 0V, VDS= 0V, f = 1MHz	R_G		2.1		Ω
Input capacitance f=1MHz, VDS=75 V, VGS=0 V	C_{iss}		5595	8388	pF
Output capacitance f=1MHz, VDS=75 V, VGS=0 V	C_{oss}		768	1152	pF
Reverse transfer capacitance f=1MHz, VDS=75 V, VGS=0 V	C_{rss}		17		pF
Total Gate Charge VDS= 75V, ID= 20A, VGS= 0 to 10V	Q_G		85		nC
Gate to Source Charge VDS= 75V, ID= 20A, VGS= 0 to 10V	Q_{GS}		35		nC
Gate to Drain Charge VDS= 75V, ID= 20A, VGS= 0 to 10V	Q_{GD}		21		nC
Turn-on delay time VDS= 75V, VGS= 10V, ID= 20A,, R_{GEN}=3Ω	$td_{(ON)}$		27		ns
Rise time VDS= 75V, VGS= 10V, ID= 20A,, R_{GEN}=3Ω	tr		31		ns
Turn-off delay time VDS= 75V, VGS= 10V, ID= 20A,, R_{GEN}=3Ω	$td_{(OFF)}$		51		ns
Fall time VDS= 75V, VGS= 10V, ID= 20A,, R_{GEN}=3Ω	tf		17		ns
Diode Forward Voltage IS = 20A ,VGS = 0V	V_{SD}			1.2	V
Maximum Continuous Body Diode Forward Current	I_S			143	A
Maximum Pulsed Body Diode Forward Current	I_{SM}			571	A
Revers Recovery Time IF=20A, di/dt = 100A/us	Trr		182		ns
Revers Recovery Charge IF=20A, di/dt = 100A/us	Qrr		539		nC

Typical Performance Characteristics

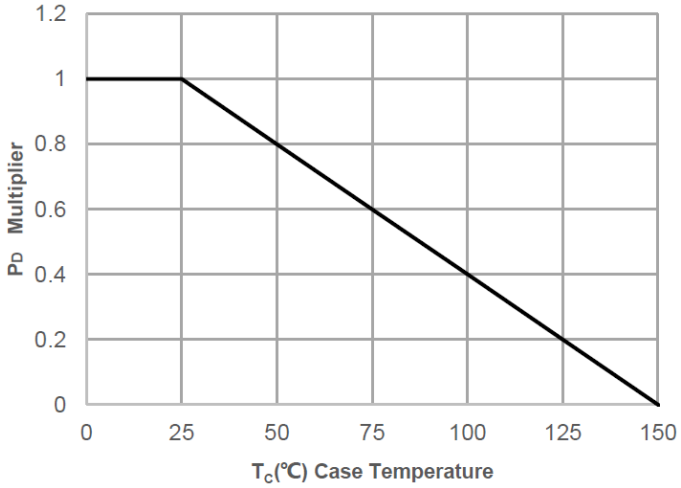


Figure 1. Power De-rating

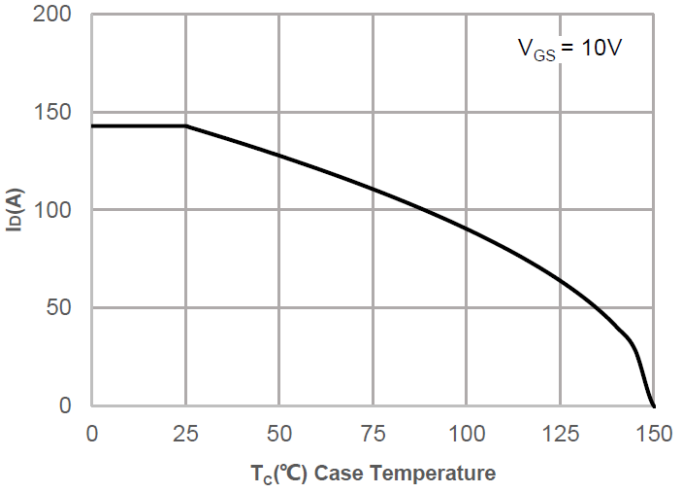


Figure 2. Current De-rating

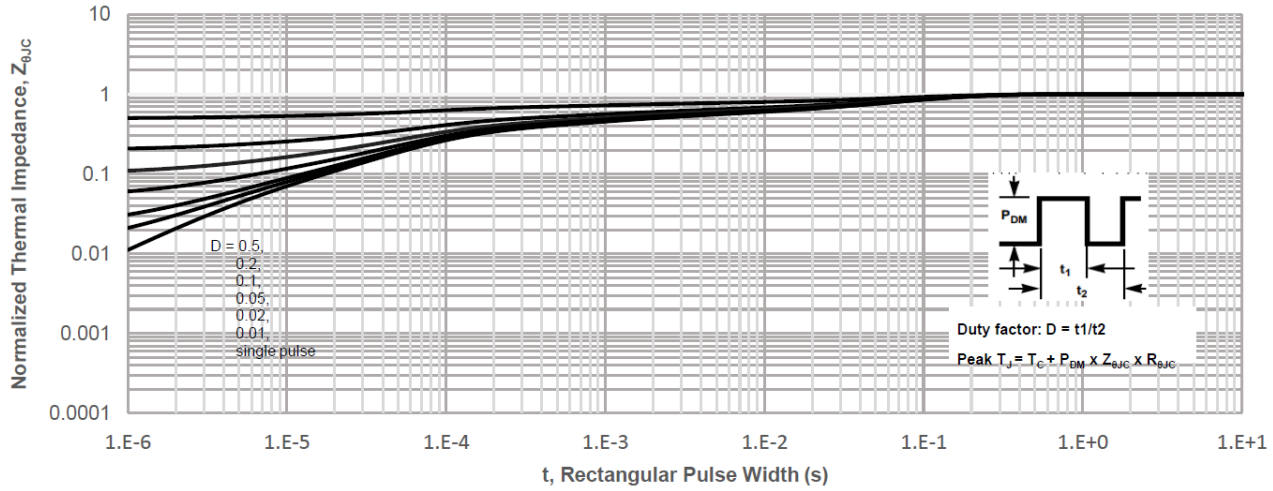


Figure 3. Normalized Maximum Transient Thermal Impedance

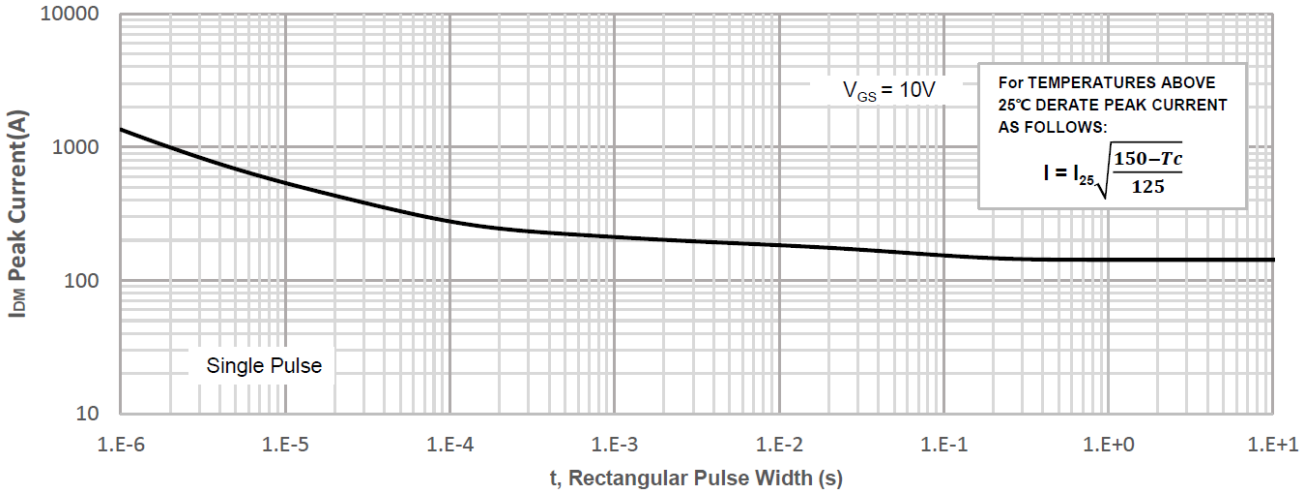


Figure 4. Peak Current Capacity

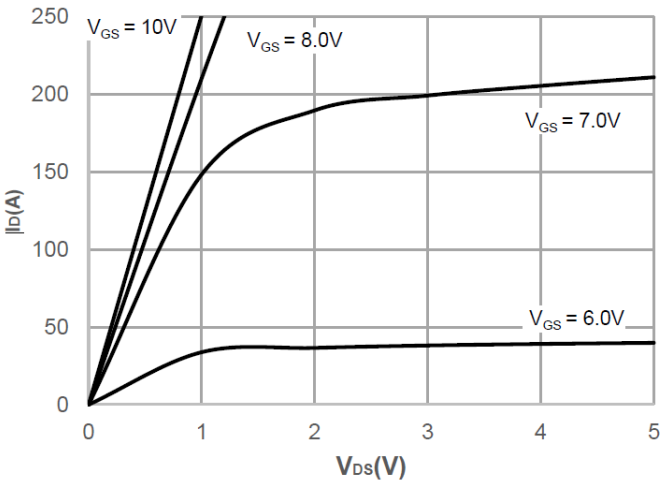


Figure 5. Output Characteristics

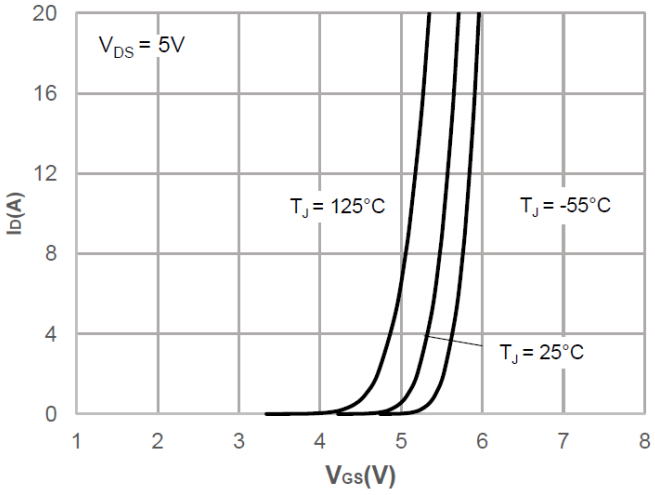


Figure 6. Typical Transfer Characteristics

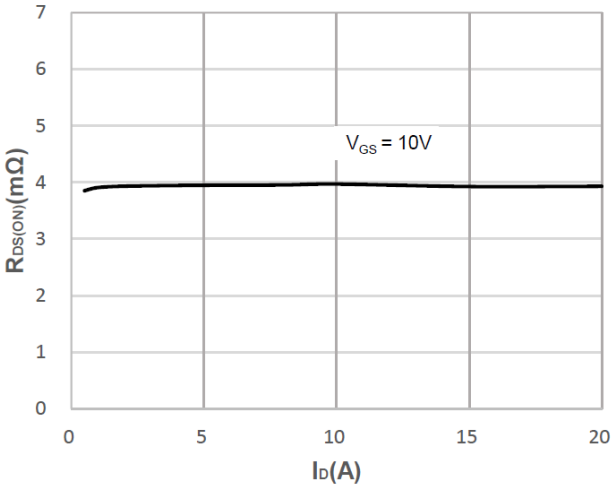


Figure 7. On-resistance vs. Drain Current

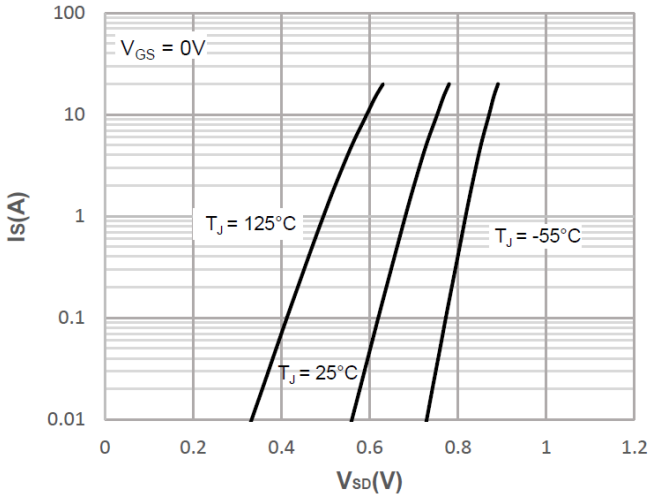


Figure8. Body Diode Characteristics

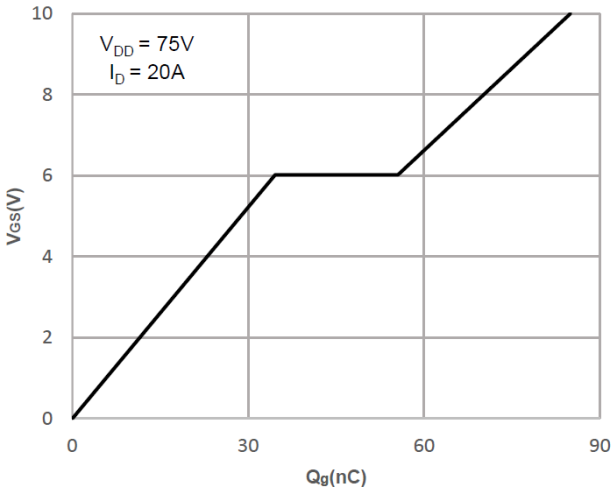


Figure 9. Gate Charge Characteristics

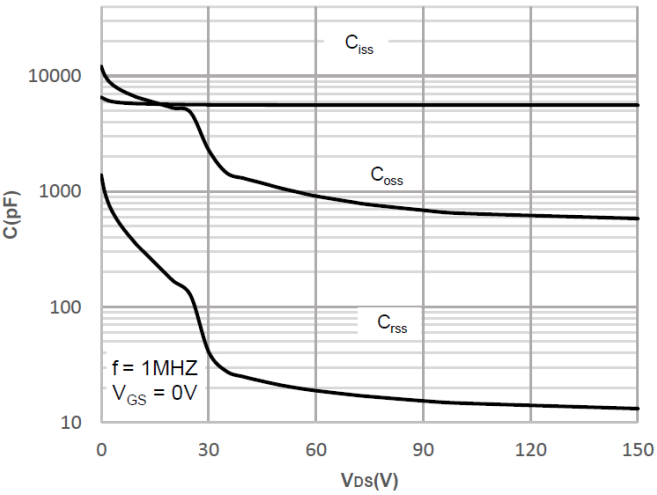


Figure 10. Capacitance Characteristics

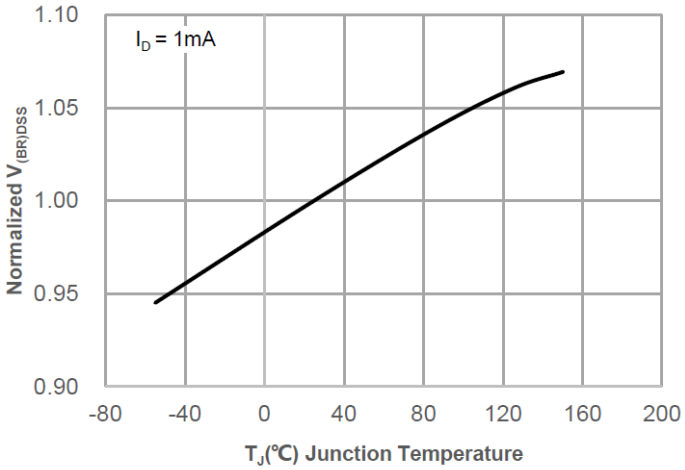


Figure 11. Normalized Breakdown voltage vs. Junction Temperature

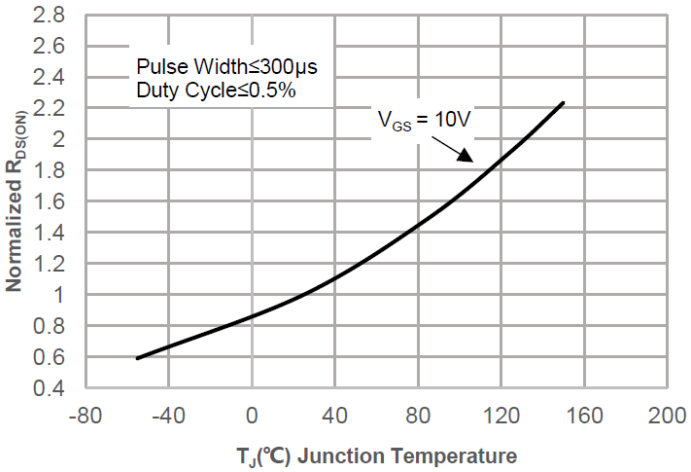


Figure 12. Normalized on Resistance vs. Junction Temperature

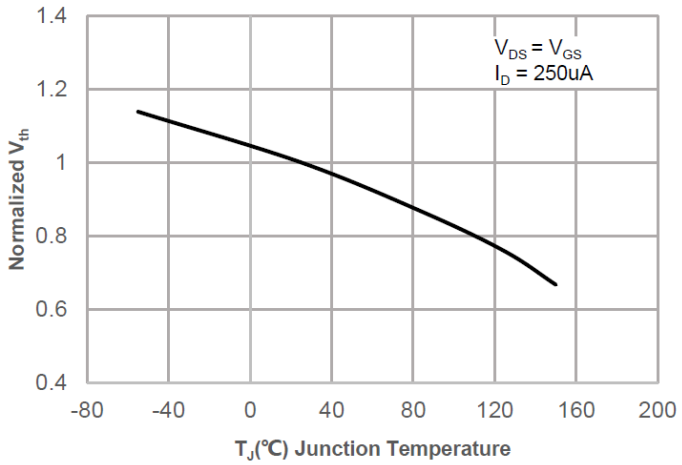


Figure 13. Normalized Threshold Voltage vs. Junction Temperature

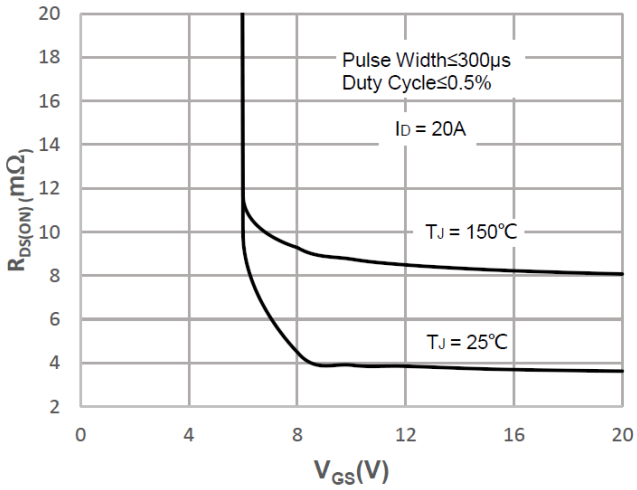


Figure 14. $R_{DS(ON)}$ vs. V_{GS}

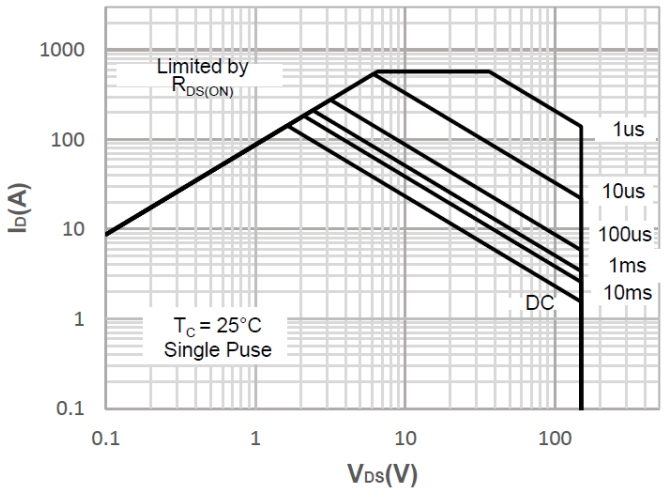
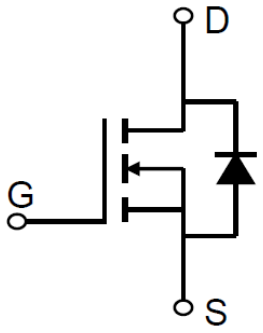
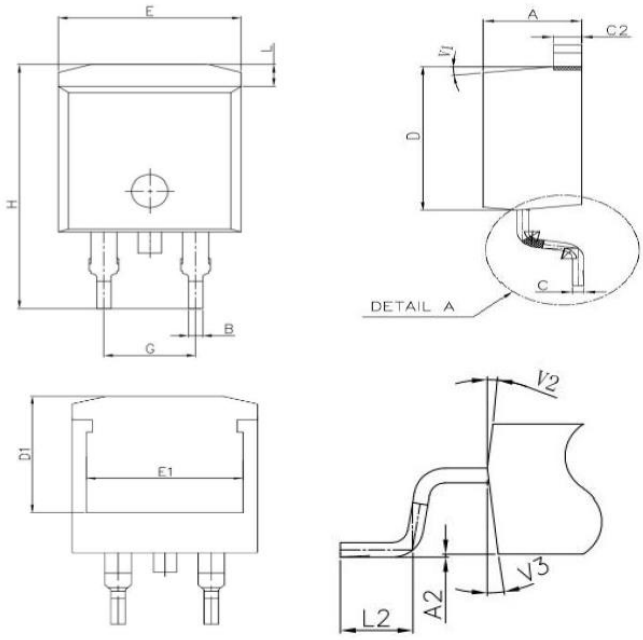


Figure 15. Maximum Safe Operating Area

·Circuit diagram



·Package outlines : Dimensions in (mm)



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	4.3	4.55	4.7
A2	0		0.15
B	0.75	0.8	0.85
C	0.38	0.46	0.55
C2	1.25	1.3	1.35
D	8.9	9.3	9.6
D1	7.4	7.65	7.9
E	9.9	10.05	10.21
E1	8.3	8.6	8.9
G	5.03	5.08	5.13
H	14.7	15	15.8
L2	2.2	2.35	2.5
L	1.16	1.36	1.61
V1	5°	7°	9°
V2	3°	5°	7°
V3	6°	8°	10°

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