

Key Parameters

- $V_{CE(sat)} = 0.50V$
- $I_C = 30A @ V_{CE(sat)} = 100$
- $V_{CE(sat)} = 1.7V$

Features:

- High ruggedness performance.
- $10\mu s$ short circuit capability.
- Positive $V_{CE(sat)}$ temperature coefficient.
- High efficiency for motor drive.

Maximum ratings

Symbol	Parameter	Values	Unit
CES	Collector-emitter voltage	650	V
GES	Gate-emitter voltage	±20	V
C	Continuous collector current ($T_c=25^\circ\text{C}$)	60	A
	Continuous collector current ($T_c=100^\circ\text{C}$)	30	A
CM	Pulsed collector current, I_p limited by v_{jmax}	120	A
F	Diode continuous forward current ($T_c=100^\circ\text{C}$)	30	A
FM	Diode maximum current, I_p limited by v_{jmax}	80	A
sc	Short circuit withstand time	10	µs
tot	Power dissipation ($T_c=25^\circ\text{C}$)	214	W
	Power dissipation ($T_c=100^\circ\text{C}$)	107	W
vj	Operating junction temperature range	-40 to +175	
stg	Storage temperature range	-55 to +150	

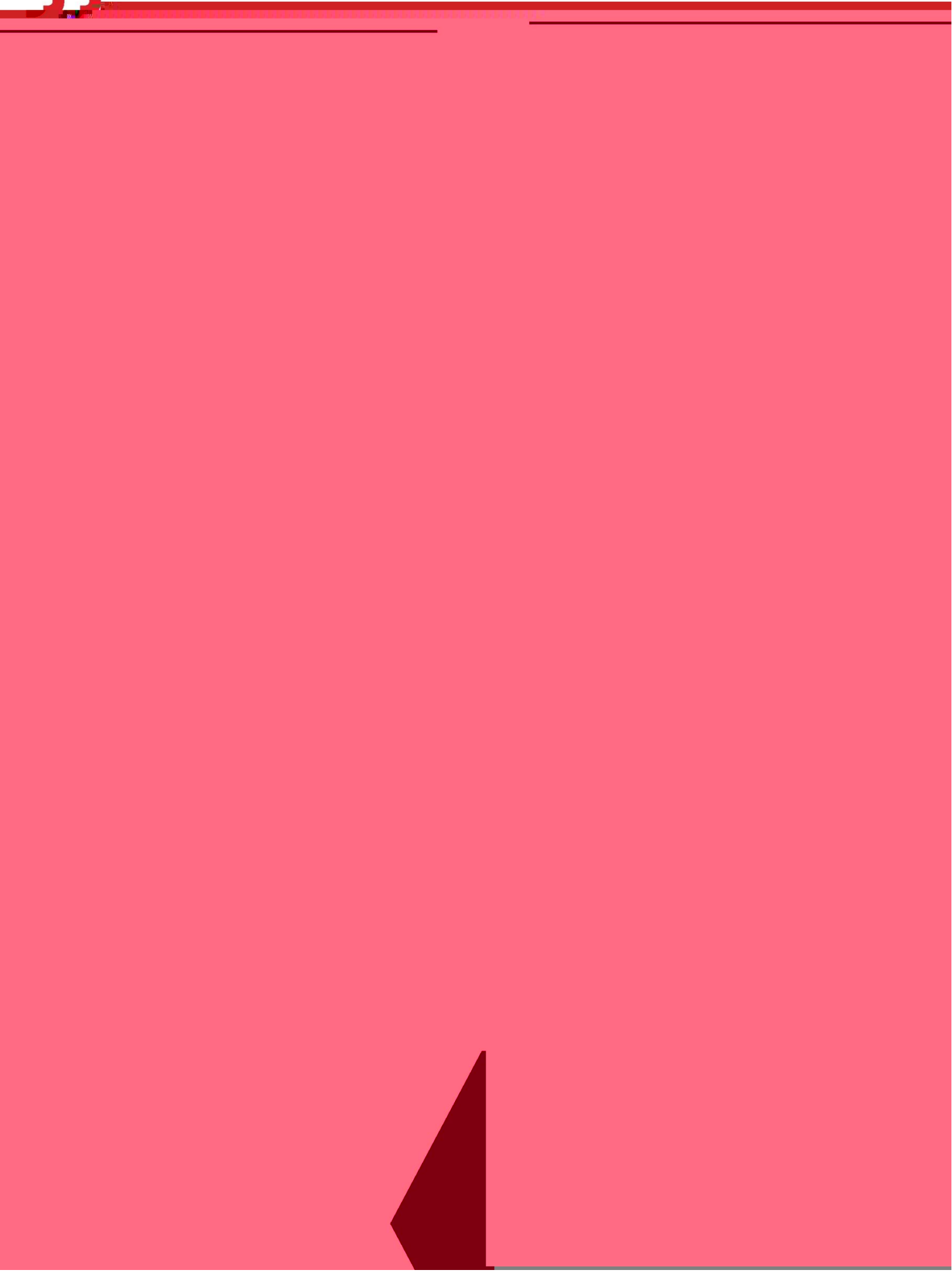
Thermal characteristics

Symbol	Parameter	Values		Unit
		Typ.	Max.	
th(j-c)	Thermal resistance, junction to case for IGBT	-	0.7	K/ W
th(j-c)	Thermal resistance, junction to case for Diode	-	1.2	K/ W
th(j-a)	Thermal resistance, junction to ambient	-	40	K/ W



Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
CES	Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	650	-	-	V
CES	Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	-	-	50	μA
GES	Gate leakage current, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	nA
	Gate leakage current, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	nA
GE(th)	Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	5.2	5.7	6.2	V
CE(sat)	Collector-emitter saturation voltage	$V_{GE}=15V, I_C=30A$	-	1.7	-	V
		$V_{GE}=15V, I_C=30A, v_j=175$	-	2.2	-	V

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
ies	Input capacitance	$V_{CE}=30V$	-	1978	-	pF
oes	Output capacitance	$V_{GE}=0V$ $f=1MHz$	-	100	-	pF
res	Reverse transfer capacitance	$V_{CC}=520V$	-	23	-	pF
g	Total gate charge	$V_{GE}=15V$ $I_C=30A$	-			



Typical performance characteristics

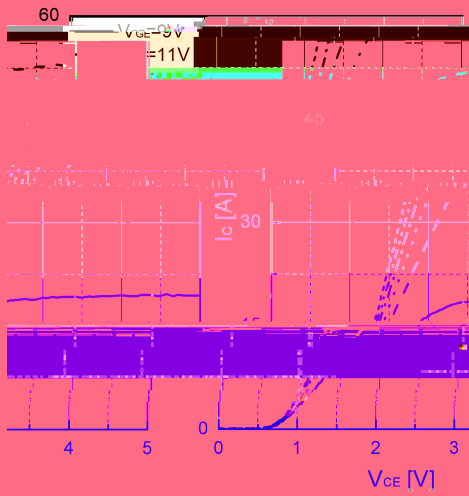


Fig 1. Typical output characteristic ($v_j=25^\circ\text{C}$)

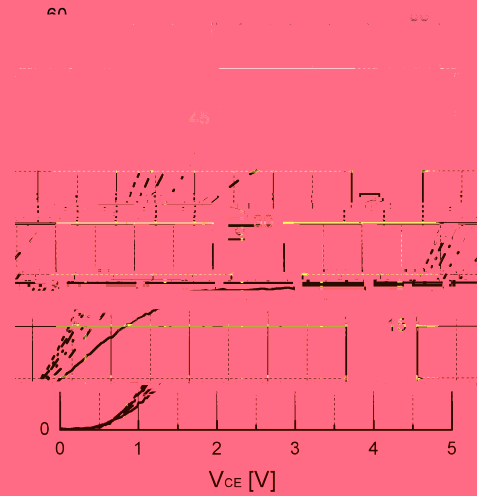


Fig 2. Typical output characteristic($v_j=175^\circ\text{C}$)

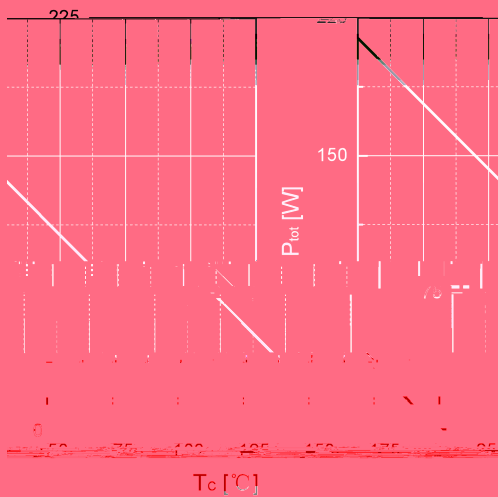


Fig 3. Power dissipation as a function of

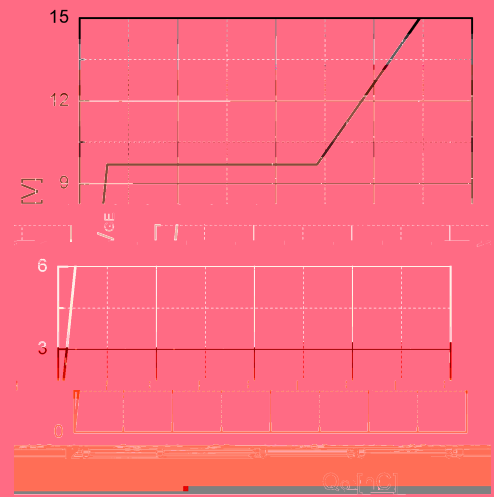


Fig 4. Typical Gate charge

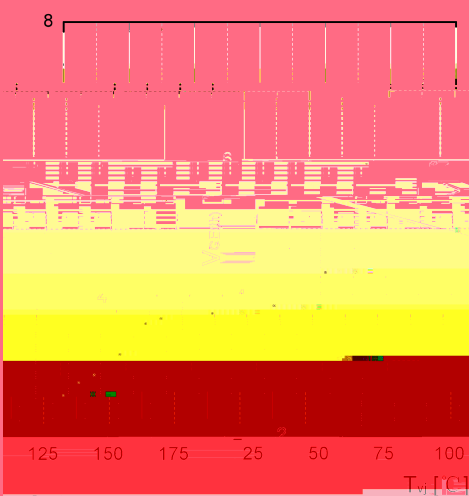


Fig 5. Typical $\theta_{GE(th)}$ as a function of v_j
($i_c=1\text{mA}$)

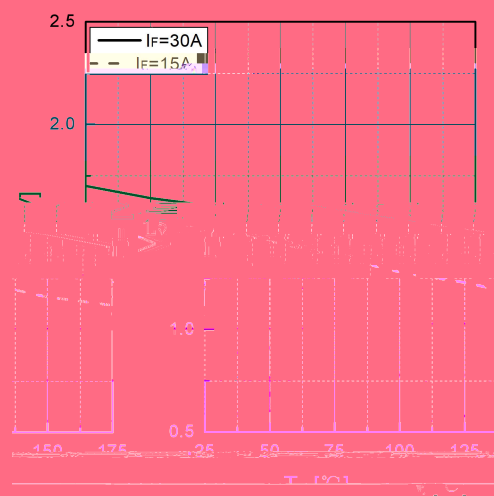


Fig 6. Typical F_T as a function of v_j



Typical performance characteristics

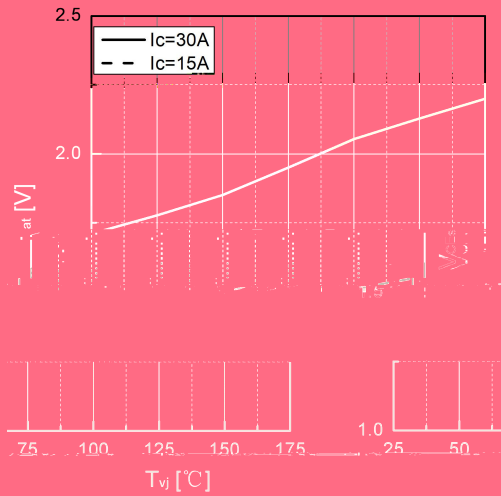


Fig 7. Typical $V_{ce(sat)}$ as a function of T_{vj}

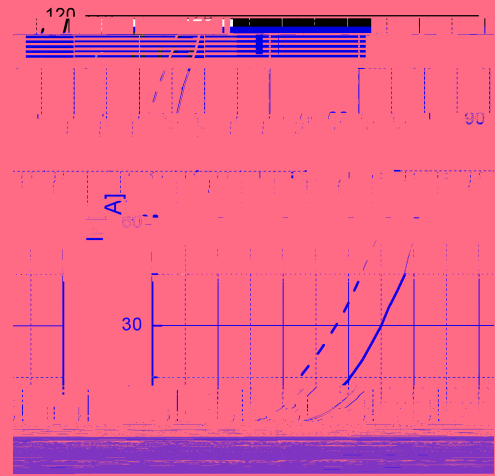


Fig 8. Typical I_F as a function of I_F

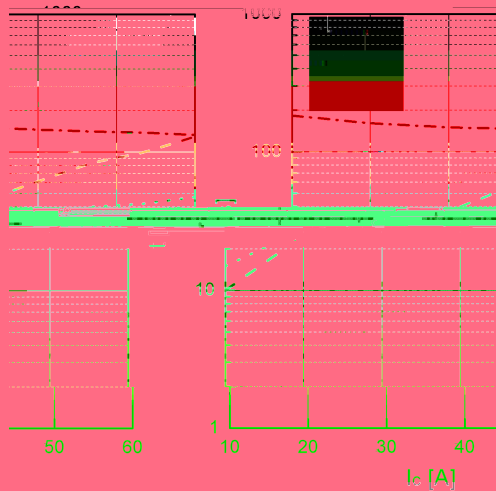


Fig 9. Typical switching time as a function of I_c

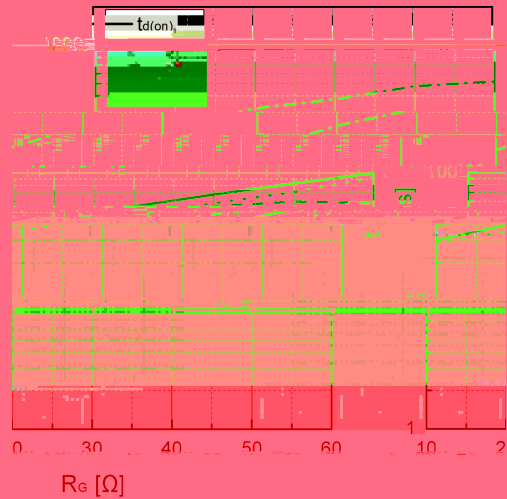


Fig 10. Typical switching times as a function of R_g

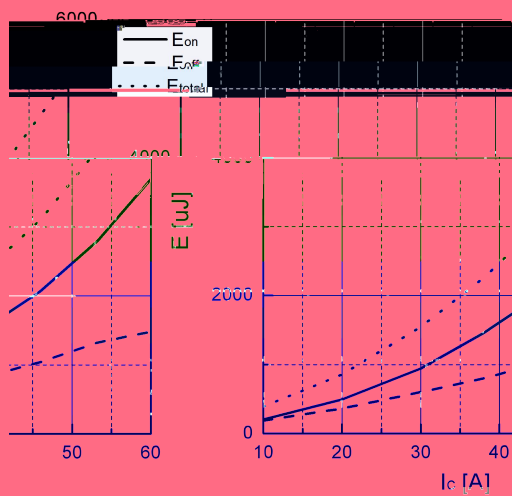


Fig 11. Typical switching energy losses as a function of I_c

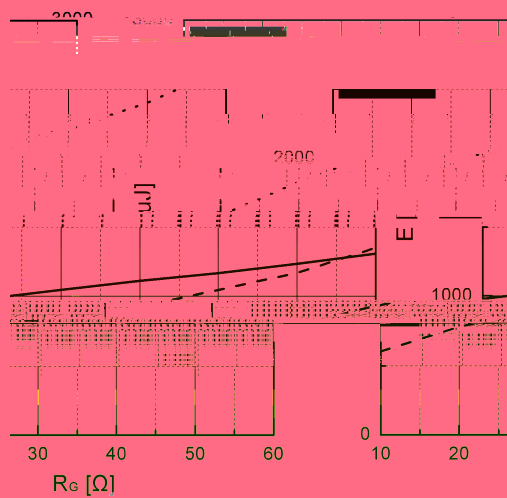


Fig 12. Typical switching energy losses as a function of R_g



Typical performance characteristics

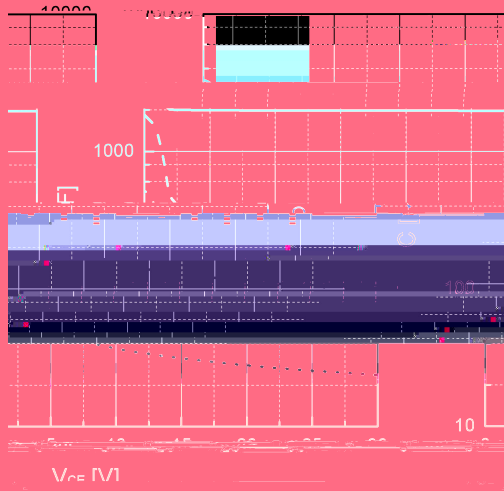


Fig 13. Typical capacitance as a function of V_{CE}
($f=1\text{MHz}$, $V_{GE}=0\text{V}$)



Dimensions

Ref.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90	-	10.20	0.390	-	0.402
B	14.70	-	15.80	0.579	-	0.622
C	9.4	-	9.6			

Date	Revision	Character
2024-03-09	Rev 1.1	Character update

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