

ISL9V3040D3S

Preliminary

Insulated Gate Bipolar Transistor

300mJ, 400V, N-CHANNEL IGNITION IGBT

DESCRIPTION

The UTC **ISL9V3040D3S** is an N-channel ignition Insulated Gate Bipolar Transistor. It uses UTC's advanced technology to provide customers with outstanding SCIS capability.

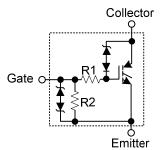
The UTC **ISL9V3040D3S** is suitable for Coil –On plug applications and Automotive Ignition Coil driver circuits, etc.

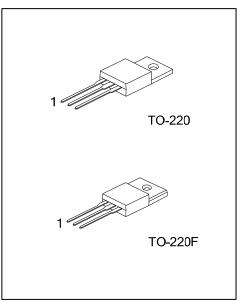
FEATURES

* Outstanding SCIS capability

* Logic level gate drive

SYMBOL





ORDERING INFORMATION

Ordering	Daakaga	Pin Assignment			Deaking			
Lead Free	Halogen Free	Package	1	2	3	Packing		
ISL9V3040D3SL-TA3-T	ISL9V3040D3SG-TA3-T	TO-220	G	С	E	Tube		
ISL9V3040D3SL-TF3-T	ISL9V3040D3SG-TF3-T	TO-220F	G	С	Е	Tube		
Note: Pin Assignment: G: Gate C: Collector E: Emitter								

(1) T: Tube
(2) TA3: TO-220, TF3: TO-220F
(3) L: Lead Free, G: Halogen Free

MARKING INFORMATION

PACKAGE	MARKING
TO-220 TO-220F	UTC 9V3040D3S□ Code Lot Code UTC 9V3040D3S□ Code UTC Science Code UTC Science Code UTC Science Code UTC Science Code UTC Science Science Data Code UTC Science Code Science Data Code UTC Science Code Science Data Code UTC Science Science Science Data Code UTC Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Science Scienco Science Science Science Science Science Sc

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise noted)

PARAMETER			SYMBOL	RATINGS	UNIT	
Collector to Emitter Breakdow	Emitter Breakdown Voltage BV _{CER} 510			510	V	
Emitter to Collector Voltage Ro	nitter to Collector Voltage Reverse Battery Condition			30	V	
At Charting	T _J =25°C, I _{SCIS} =14.2A, L	_=3.0mHy	-	300	mJ	
At Starting	T _J = 150°C, I _{SCIS} =10.6A	, L=3.0mHy	E _{SCIS}	170	mJ	
Cartinueus Callastar Current	T _C =25°C			21	А	
Continuous Collector Current	T _C =110°C		I _C	17	А	
Gate to Emitter Voltage Continuous			V_{GEM}	±10	V	
TO-220		TO-220		125	W	
Power Dissipation Total at T _C =	-25 C	TO-220F	_	510 30 300 n 300 n 170 n 21 n 17 n ±10 n 125 n 41.6 n 1 w 0.332 w 44 k -40~175 °	VV	
Devuer Dissinction Deveting T	> 2F ⁰ O	TO-220	220 P _D 1		14/190	
Power Dissipation Derating To	25 0	TO-220F		0.332	W/°C	
Electrostatic Discharge Voltage at 100pF, 1500Ω			ESD	4	kV	
Junction Temperature		TJ	-40~175	°C		
Storage Temperature Range		T _{STG}	-40~175	°C		

Note: Absolute maximum ratings are stress ratings only and functional device operation is not implied. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT	
hundhan ta Oana	TO-220	0	1.0	°0141	
Junction to Case	TO-220F	θ _{JC}	3.0	°C/W	

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise noted)

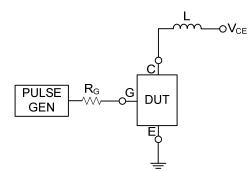
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Off State Characteristics							
Collector to Emitter Breakdown Voltage	BV_{CER}	I _C =2mA, V _{GE} =0V, R _G =1KΩ, T _J =-40~150°C		310		510	V
Collector to Emitter to Breakdown Voltage	BV _{CES}	I _C =10mA, V _{GE} =0V, R _G =0, T _J =-40∼150°C		340		560	V
Emitter to Collector Breakdown Voltage	BV _{ECS}	I _C =-75mA, V _{GE} =0V, T _C =25°C		30			V
Gate to Emitter Breakdown Voltage	BV _{GES}	I _{GES} =±2mA	•	±12	±14		V
Collector to Emitter Leakage Current		V _{CER} =250V,	T _C =25°C			25	μA
	I _{CER}	R _G =1KΩ	T _C =150°C			1	mA
Emitter to Collector Lookago Current	I _{ECS}	V _{EC} =24V	T _C =25°C			1	mA
Emitter to Collector Leakage Current	IECS	VEC-24V	T _C =150°C			40	mA
Series Gate Resistance	R ₁				70		Ω
Gate to Emitter Resistance	R ₂			10K		26K	Ω
On State Characteristics							
		I _C =6A, V _{GE} =4V	T _C =25°C		1.25	1.60	V
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =10A, V _{GE} =4.5V	T _C =150°C		1.40	1.80	V
		I _C =15A, V _{GE} =4.5V	T _C =150°C		1.90	2.20	V
Dynamic Characteristics				÷			
Gate Charge	Q _{G(ON)}	I _C =10A, V _{CE} =12V, V	V _{GE} =5V		17		nC
Gate to Emitter Threshold Voltage	$V_{GE(TH)}$	I _C =1.0mA, V _{CE} =V _{GE}		1.3		2.2	V
Gate to Emitter Plateau Voltage	V_{GEP}	I _C =10mA, V _{CE} =12V			3.0		V
Switching Characteristics				÷			
Current Turn-On Delay Time-Resistive	t _{d(ON)R}				0.48	4	μs
Current Rise Time-Resistive	t _{rR}	V _{CE} =14V, R _L =1Ω, V _{GE} =5V,			2.1	7	μs
Current Turn-Off Delay Time-Inductive	$t_{d(OFF)L}$	R _G =1KΩ, T _J =25°C			1.4	15	μs
Current Fall Time Inductive	t _{fL}]			2.2	15	μs
Self Clamped Inductive Switching	SCIS	T_J = 25°C, L=3.0mHy, R_G =1K Ω ,				300	mJ

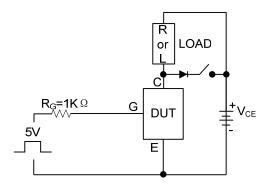


ISL9V3040D3S	Pr	eliminary	iminary Insulated Gate			Bipolar Transistor				
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT			
			Vor=5V							



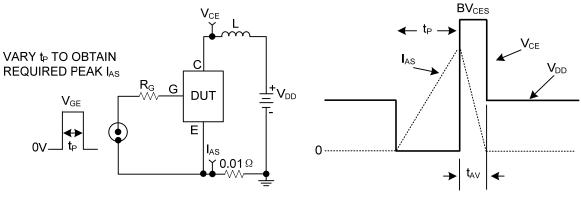
TEST CIRCUIT AND WAVEFORMS





Inductive Switching Test Circuit





Energy Test Circuit

Energy Waveforms

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