

Description

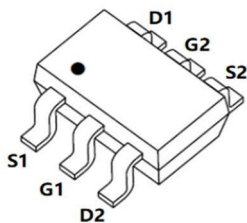
PECJ Dual P-channel Enhancement Mode Power MOSFET

Features

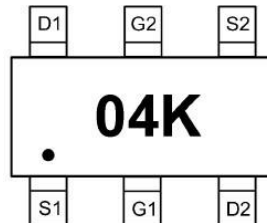
- $V_{DS} = -20V$, $I_D = -0.66A$
 $R_{DS(ON)} < 0.52\Omega$ @ $V_{GS} = -4.5V$
 $R_{DS(ON)} < 0.7\Omega$ @ $V_{GS} = -2.5V$
- Surface Mount Package
- P-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected: HBM 2KV

Application

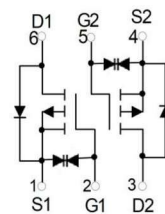
- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics



SOT-363 top view(Dual)



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
04K	PECJ2004KDTW	TAPING	SOT-363	-	-	-

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	A
		$T_A = 100^\circ C$	
I_{DM}	Pulsed Drain Current note1	-2.64	A
P_D	Power Dissipation	$T_A = 25^\circ C$	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	833	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -16V, V _{GS} =0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±10V	-	-	±10	uA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-0.35	-0.65	-1.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} = -4.5V, I _D = -0.5A	-	0.38	0.52	Ω
		V _{GS} = -2.5V, I _D = -0.2A	-	0.48	0.7	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -16V, V _{GS} =0V, f=1.0MHz	-	113	-	pF
C _{oss}	Output Capacitance		-	15	-	pF
C _{rss}	Reverse Transfer Capacitance		-	9	-	pF
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -0.3A, V _{GS} = -4.5V	-	9.8	-	nC
Q _{gs}	Gate-Source Charge		-	1.6	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	3.4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -10V, I _D = -0.2A, R _G =10Ω, V _{GS} = -4.5V	-	9	-	ns
t _r	Turn-on Rise Time		-	5.7	-	ns
t _{d(off)}	Turn-off Delay Time		-	32.6	-	ns
t _f	Turn-off Fall Time		-	20.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-0.66	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-2.64	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S = -0.5A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

Figure1: Output Characteristics

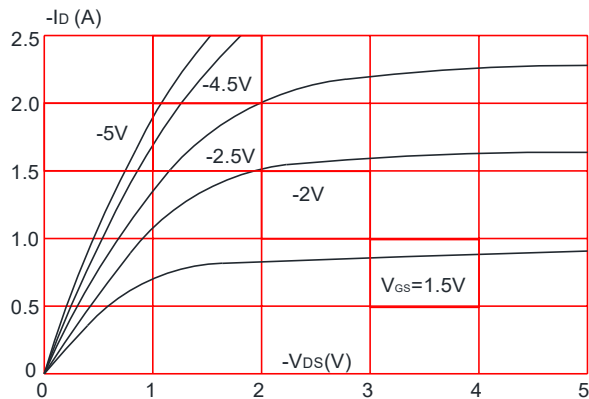


Figure 2: Typical Transfer Characteristics

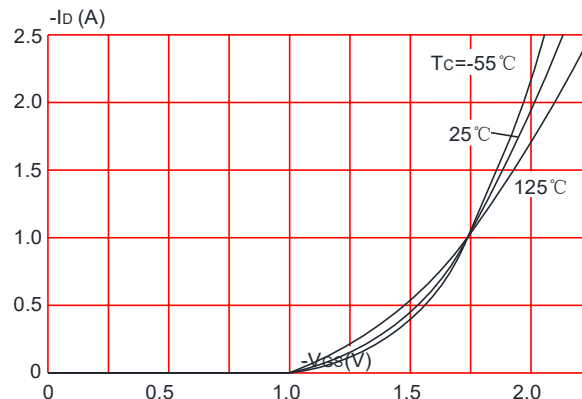


Figure 3: On-resistance vs. Drain Current

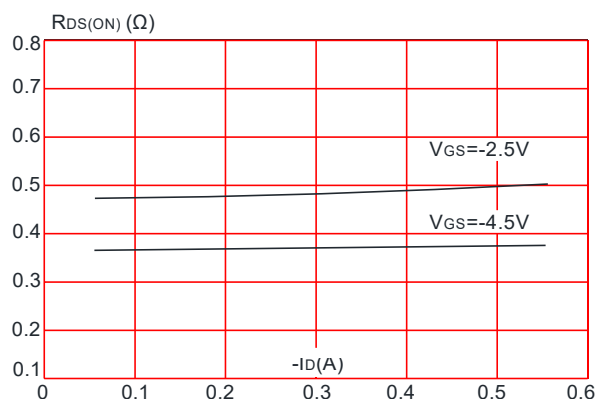


Figure 4: Body Diode Characteristics

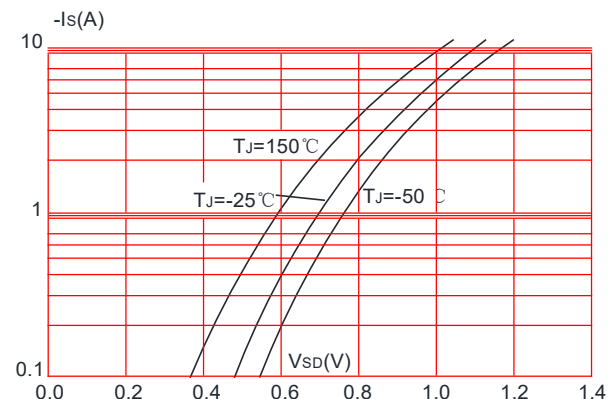


Figure 5: Gate Charge Characteristics

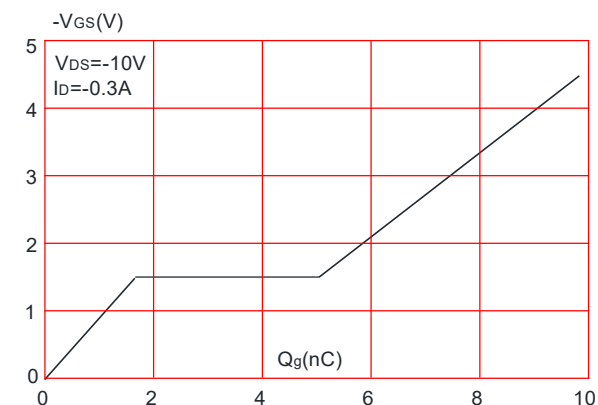


Figure 6: Capacitance Characteristics

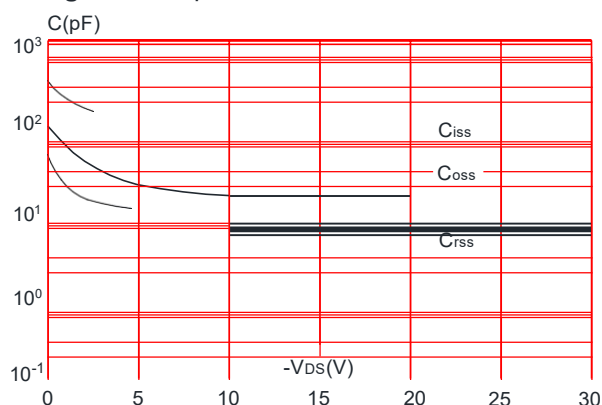


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

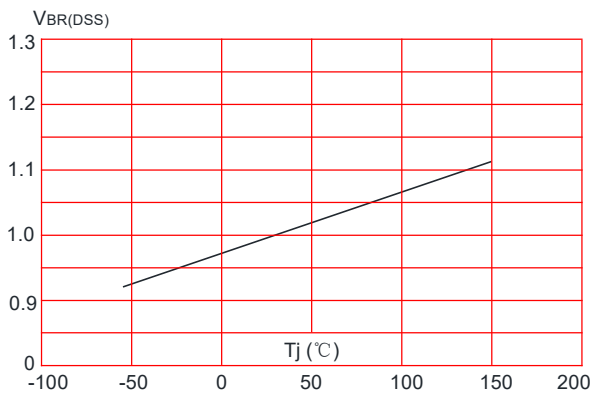


Figure 8: Normalized on Resistance vs. Junction Temperature

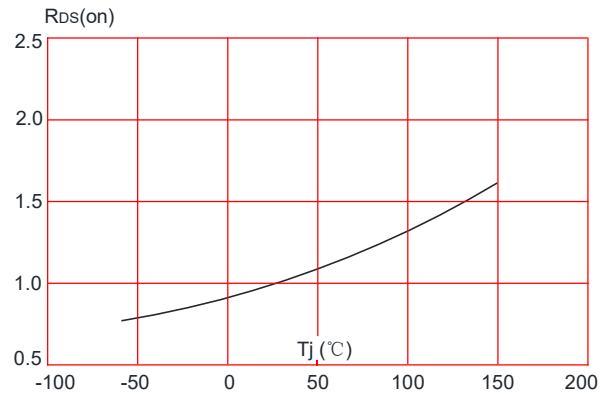


Figure 9: Maximum Safe Operating Area

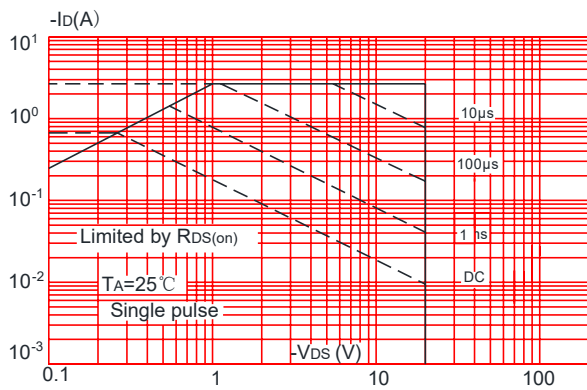


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

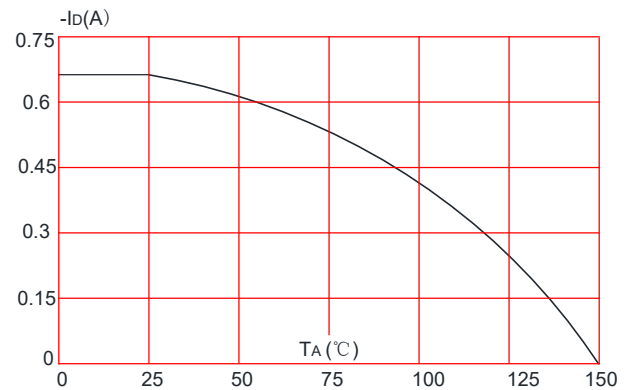
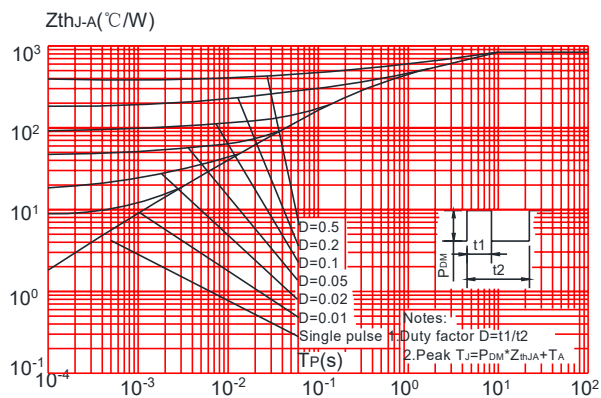
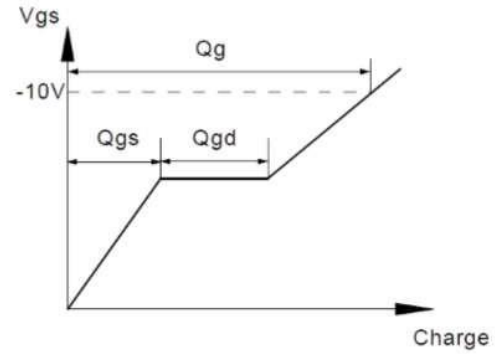
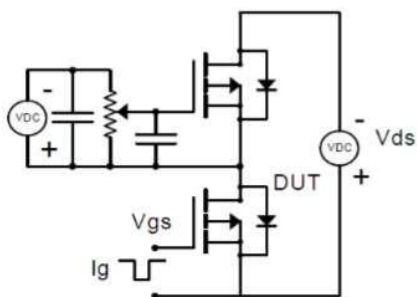


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

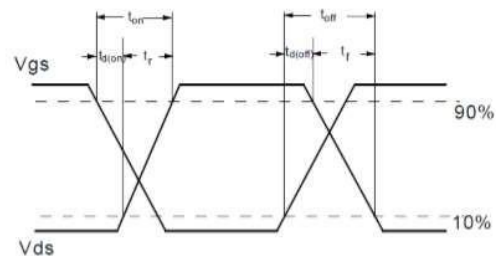
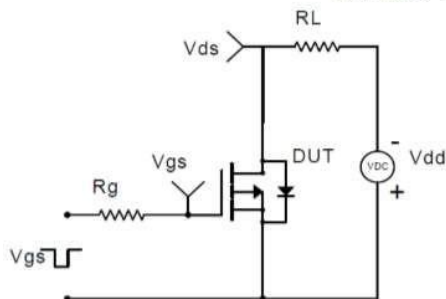


Test Circuit

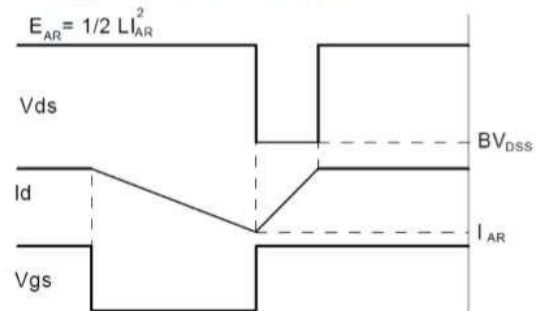
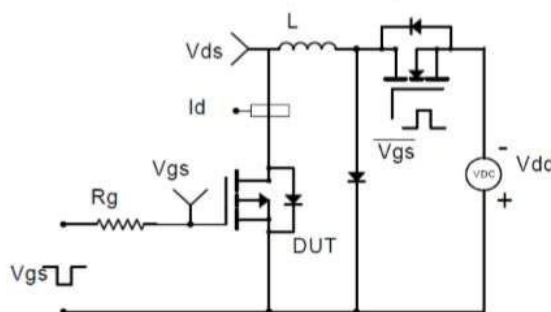
Gate Charge Test Circuit & Waveform



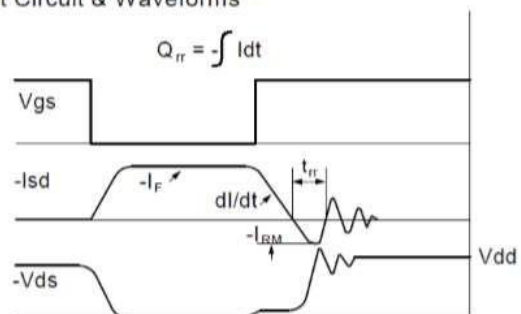
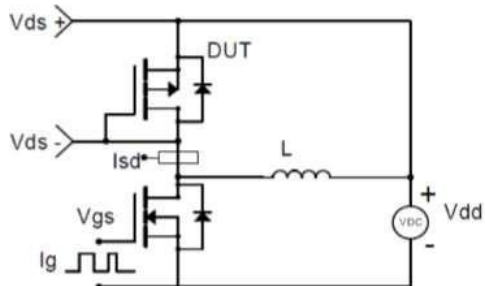
Resistive Switching Test Circuit & Waveforms



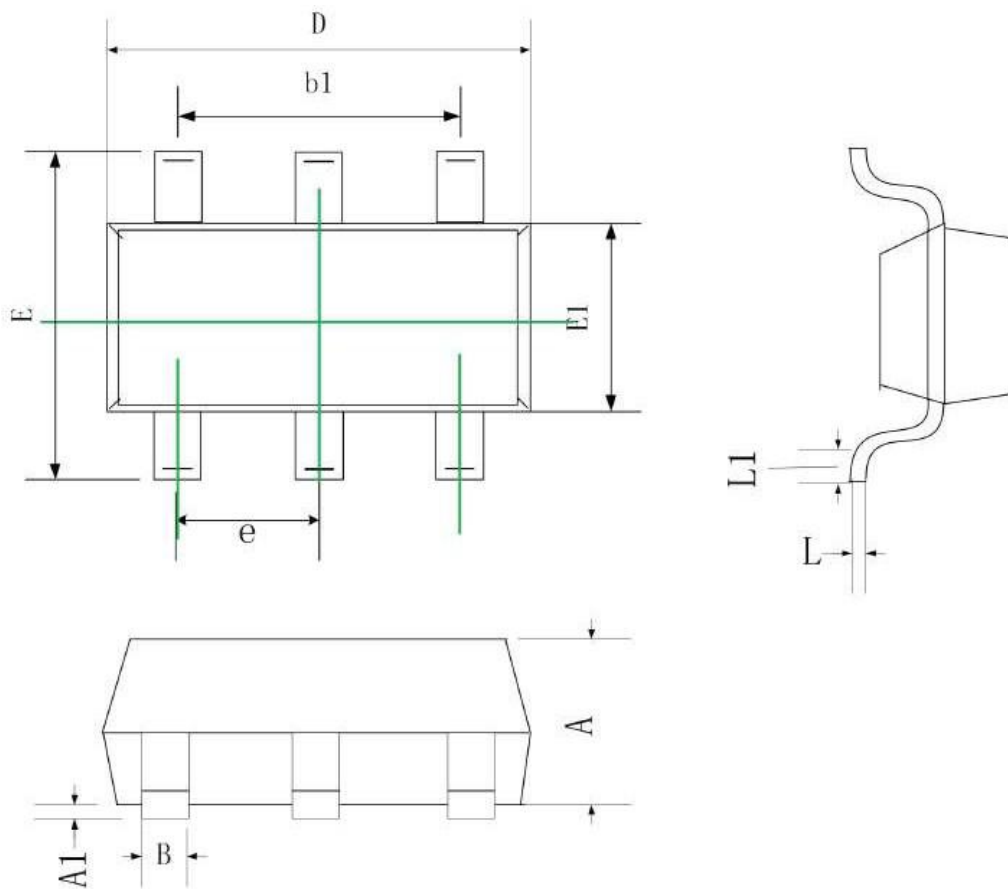
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data-SOT-363



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.00
A1	0.00	0.10
B	0.10	0.30
b1	1.30	
D	1.80	2.20
E	2.00	2.20
E1	1.15	1.35
e	0.65 TYP.	
L	0.10	0.25
L1	0.15	0.4